

**Granite Reliable Power Windpark
Coos County, New Hampshire**

VISUAL IMPACT ASSESSMENT



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I. Introduction

A. Purpose of Report

This report examines the aesthetic impacts of the proposed Granite Reliable Power Windpark Project. It describes the characteristics of the proposed project including turbines, roads, collector and interconnection lines, and assesses how they may affect the surrounding area generally and public scenic and recreational resources within a 10 mile (16 km) radius of the proposed project in particular. Impacts to private residences and camps are discussed generally, though as a rule access to private property for purposes of analysis is not feasible.

The proposed Granite Reliable Power Windpark Project is located in Coos County, New Hampshire. It falls primarily within the unincorporated areas of Dixville and Millsfield with electrical transmission facilities extending into the incorporated area of Dummer.

The methodologies used in the aesthetic impact assessment are outlined below and the assessment and conclusions are discussed in detail in the report. Maps, photographs and simulations can be found in the Appendices to the Report.

B. Authors' Background and Qualifications

The resumes of Jean Vissering and Thomas Kokx can be found in Appendix G.

Jean Vissering is principal landscape architect with Jean Vissering Landscape Architecture in Montpelier, Vermont. Her educational background includes both undergraduate and graduate degrees in landscape architecture. Her practice focuses on visual impact assessment, visual resource planning, community planning and design, and residential design.

Visual assessment and planning projects include housing subdivisions, ski areas, transmission lines, and communication towers, and have often been on behalf of Towns, Regional Planning Commissions and citizen organizations. She became involved in wind energy issues in 2002 when she helped facilitate discussions with numerous stakeholders in Vermont in a series of meeting sponsored by the Vermont Public Service Department. She wrote *Wind Energy and Vermont's Scenic Landscape* outlining areas of consensus regarding the design and siting of wind energy projects in Vermont (available on line at the Vermont PSD website). She also authored a chapter in the recently published *Environmental Impacts of Wind-Energy Projects* by the National Research Council of the National Academies. She has spoken around the country on the issue, and has provided informal and formal assessments for several wind projects including the Deerfield Wind project in southern Vermont on behalf of PPM, the Redington/Black Nubble Wind Project in Maine on behalf of the Appalachian Trail Conservancy,

and the Kibby Wind Project on behalf of TransCanada. She has also worked on behalf of Towns and Regional Planning Commissions to provide independent evaluations of proposed wind projects and to ensure a thorough review.

From 1982 until 1997 she taught at the University of Vermont including both undergraduate and graduate courses in visual resource planning, landscape design and park and recreation design. Prior to that and beginning in 1976, she worked with the Vermont Department of Forests, Parks and Recreation as a park planner, state lands planner, and reviewing projects for aesthetic impacts under Vermont's Land Use Law known as Act 250.

Thomas Kokx is principal of Thomas Kokx Associates (TKA), a Landscape Architecture and Planning Firm located in Gilford, New Hampshire. TKA provides professional consulting services in visual resource assessment, accessible outdoor recreation planning and facility design, and ecology based land use planning. Tom established the firm in 1997 after 28 years experience as a Landscape Architect with the U.S. Forest Service.

Tom's services come with a wide range of experience in land use issues, regional planning, and natural resource management activities throughout the country, especially in the northeast. Tom is highly knowledgeable in the U.S. Forest Service Scenery Management Systems and other scenic resource inventory processes, and in their application to natural resource management activities. Experience includes working with public agencies, non-profit organizations, communities, and businesses in the private sector.

Tom recently completed an extensive planning effort for NH Division of Parks and Recreation for the Connecticut Lakes Headwaters Working Forest Recreation Access and Road Management Plans. He is currently involved in visual assessment oversight responsibilities for the proposed Deerfield Wind Project on the Green Mountain National Forest in Vermont.

Tom graduated from Michigan State University with a B.S. in Landscape Architecture. Experience in visual resource assessment and scenery management includes visual inventory and assessment for numerous ski area projects in New England (including most ski areas on the White Mountain National Forest); visual assessment work for Nash Stream Forest; working with the White Mountain National Forest to implement the new Scenery Management System in their revised 2006 Forest Plan and to train Forest personnel in its application; and assisting communities in visual assessment projects including the towns of Meredith and New Hampton in New Hampshire, and Ogunquit, Maine. He has participated in numerous workshops and conferences speaking and/or providing training in visual resource inventory and assessment work and has received national and regional awards for his work.

C. Aesthetic Assessment Methodology

The methodology used in assessing visual impacts is similar to that outlined in the 2007 report of the National Academy Research Council, *Environmental Impacts of Wind-Energy Projects*. It is based on established visual assessment principles and on methodologies first established by the US Forest Service. In addition, the report will address the standards and guidelines contained in the New Hampshire Site Evaluation Committee's Draft Rules, and within local and regional planning documents.

The visual assessment is based upon extensive field inventory work including visiting significant public use and recreation areas (e.g., public roads, lakes and ponds, hiking trails, recreation sites, village centers and historic sites), along with photographic and written documentation of views and their visual characteristics. Visual inventory work was conducted during both leaf-on and leaf-off conditions. Public sessions are planned by the Developer during the permitting of the Granite Reliable Power Windpark and will highlight the results of this report.

This report is organized as follows:

Part I: Introduction

Part II: Project and Site Characteristics

A. Project Description: A discussion of the project elements and their visual characteristics including (see Appendix A, Project Map)

1. Turbine Characteristics: height, color
2. Turbine Location: miles of ridgeline, cleared areas
3. Turbine Lighting
4. Meteorological Towers
5. Access Roads
6. Power Lines: on-site and off-site collector and interconnector lines
7. Substation
8. Operations and Maintenance Building and Laydown Areas

B. Project Site Characteristics

Part III: Regional Landscape Character

A discussion of the visual attributes and scenic, natural and cultural/historic resources of the surrounding landscape within a 10-15mile (16-24 km) radius of the project.

Part IV: Project Visibility

A discussion of public viewing locations from which the project would be visible within the 10 mile (16 km) study area. These are summarized in the

Table of Views, Appendix D. The following information found in the Appendices provides useful reference.

- **Viewshed Maps:** These computer-generated maps indicate *potential* visibility of the turbines based upon topographic interference. The viewshed maps highlight open areas including lakes and ponds, open meadows, and wetlands where visibility is more likely (shown in tan). Visibility within forested areas (shown in dark green) is expected to be minimal, though this may be influenced by forest harvesting practices. Actual visibility in all areas must be field verified. Viewshed maps indicate visibility even when only the tip of a blade is visible. The viewshed map does show with reasonable certainty areas from which the project would not be visible. See Appendix B for viewshed maps and a discussion of how the maps were created.
- **Photographic Documentation:** photographs of the project site and from most identified viewpoints are included in the report and in Appendix E. Unless otherwise noted, photographs used in this report were taken either by Jean Vissering or Thomas Kokx, and were taken with a 50-52mm (film) equivalent focal length (34mm digital). GPS points were recorded for each viewpoint.
- **Simulation Photographs¹:** Simulation photographs (Appendix F) were prepared for the following locations: NH Route 26 near Fish Hatchery Road (Colebrook), NH Route 26 near Signal Mountain Road (Millsfield), Millsfield Pond, Keach Road (Columbia), and North Percy Peak (Nash Stream Forest, Stratford). The simulation locations were selected based on relative sensitivity of viewing areas and to present a range of different settings and distances (See Appendix F for a discussion of how the simulations were created.)

Part V: Visual Impact Assessment

A. Sensitivity of Viewpoints

Some viewpoints have greater sensitivity to aesthetic impacts than others due to factors such as the expected experience level (e.g., a natural landscape without motorized vehicles or equipment), the distance from the project, the duration of view, the scenic quality of the view, and the expressed public value in either local, state or national planning or other documents. This section identifies certain viewpoints within the study area that warrant greater analysis due to their relative sensitivity to aesthetic impacts.

¹ A note about nomenclature: Landscape Architects generally use the term “photographic simulation” in referring to a photograph on which images of turbines or other proposed development are superimposed to “simulate” how the project will appear from particular viewpoints. Computer specialists are now using the term “photomontage” to refer to the layering of other images onto a photograph, while “simulation” refers to a virtual landscape image created using digital elevation modeling and enhancing it with digitally created images of trees, buildings, roads, etc. to mimic existing conditions. The latter have not been used in this report.

B. Assessment of Visual Impacts

The assessment of visual impacts examines the **degree** to which characteristics of the proposed project may affect the overall experience of the landscape within the region as a whole or degrade views from highly sensitive viewpoints.

C. Compliance with SEC Standards and Local and Regional Masterplans

Part VI: Conclusions

A summary of the report findings.

Appendices

- A. Project Map
- B. Viewshed Map
- C. Viewpoint Map
- D. Table of Views
- E. Viewpoint Photos
- F. Photo Simulations
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10-MILE STUDY AREA

The focus of our analysis was an area roughly 10 miles (16 km) in radius around the proposed project. In general at 10 miles (16 km) away turbines appear very small and normally occupy a very small portion of the view. It is within 10 miles (16 km) that visual impacts of wind energy projects have a greater potential to be significant. Some distant viewing locations were also analyzed due to their high public use and potential viewer sensitivity levels such as Lake Umbagog.

II. Project Description and Site Characteristics

A. Project Description

The project would consist of 33 turbines located along three ridgelines. Approximately 8 turbines would be located along a portion of **Dixville Peak**, another 13 turbines on **Mt. Kelsey and Owlhead**, and 12 turbines along a ridge south of Mt. Kelsey known locally as **Fishbrook**. Since from most vantage points, Mount Kelsey and Owlhead appear as a single ridge, we will refer to this landform as the **Kelsey/Owlhead Ridge**. **Owlhead** is located at the southern end of Mount Kelsey. Eight of the 13 turbines would be located on Mt. Kelsey with another 5 turbines located south and west of the summit of Owlhead. The three ridges extend north to south.²

The **turbines** would be Vestas V-90 which have a rated capacity of 3 megawatts (MW). They are 263 feet (80 m) to the nacelle (hub) and a total of 410 feet (125 m) to the tip of the blades. The rotor diameter is 295 feet (90m). The turbines would be a white or off-white color. An approximately 1.6 acre area around each turbine will be cleared during construction with a foundation base 50 feet (15.2 m) in diameter installed at the center. Roughly 1.4 acres of this area will be allowed to re-vegetate following construction leaving approximately 0.2 acre of cleared area around each turbine.

Some of the turbines would be lit at night. Current FAA guidelines recommend one red (L-864) nighttime strobe **light** mounted on top of the nacelle of turbines at the beginning and end of each string and approximately every half mile in between. FAA is currently reviewing the turbine locations, and will be working with Granite Reliable Power to ensure that safety requirements are met with minimal lighting.

Road access will utilize existing logging road as much as possible. An additional 9 miles of **access road** would be constructed from the south in Dummer to the southern turbine strings. These proposed roads have been sited to avoid steep grades and associated re-grading. Access roads would be 25 feet (7.6 m) wide while **summit roads** between turbines would require a temporary width of 34 feet (10.4 m), a portion of which would be re-vegetated following project construction. Approximately 7.2 miles (11.6 km) of road would be above 2700 feet (823 m) in elevation.

Power would run underground from the turbine to **buried collector lines along ridge summits**. **Off of ridge tops, the 34.5 kilovolt (kV) collector lines would be** mounted on 60-foot (18.3 m) poles and run next to the roads or be buried depending upon terrain and environmental review. These lines would require a cleared width of 60 feet (18.3 m). Collector lines will connect to a **substation** which is expected to be a 215-foot by 415-foot (65.5 by 126.5 m) fenced area located along Dummer Pond

² There is the possibility that the project will install permanent meteorological towers (lattice structures up to 260 feet (79.2 m) high). However, at present there are no specific plans for these structures.

Road. A 115kV interconnector line would run approximately 7 miles (11.3 km) along Dummer Pond Road and connect with the existing PSNH 115kV transmission line located north of NH Route 110.

There would also be a permanent **Maintenance Building** with associated storage located adjacent to the substation. The building itself would be about 5000 square feet (464.5 square m) in size and occupy an area of about 0.2 acres.

During construction, additional cleared areas would be needed for **temporary storage** of parts and equipment. These would be located in areas that have recently been cleared for forest management on the site adjacent to Dummer Pond Road in proximity to the proposed substation and Maintenance Building.

B. Alternative Turbine Configurations Considered

During the process of our assessment, several other sites were considered by Granite Reliable Power for turbine locations. These were west and south of the currently proposed ridges and included Baldhead Mountain, a ridge in Ervings Location, the eastern flank of Whitcomb Mountain, ridges east of Little Bog and Upper and Lower Trio Ponds, and a ridge in Dummer between Long and Cow Mountains. These ridges would have been both closer to camps and to the Nash Stream Forest.

C. Characteristics of Project Site

The project site consists of three generally linear ridges running north to south. The land is currently owned by Bayroot and Kennebec West and locally known as the Bayroot and Phillips Brook parcels (see Project Map, Appendix A). The three ridges tend to be long and linear in form, rising gently to a high point³. This characteristic form not only makes development along the ridge easier but does not make them visually distinct in contrast to more dramatic peaks in the area such as North Percy Peak. The northern end of Dixville Peak is known as Table Rock and has a more distinctive profile which drops off into the Dixville Notch. The project would be located approximately 1.6 miles (2.6 km) south of the Notch itself and not along the Table Rock area.

Large portions of the flanks of Kelsey/Owlhead and Fishbrook have been actively logged up to 2700 feet (823 m) in elevation. Dixville Peak has a ski area along the northwest flank. There is also a trail extending over Dixville Peak that is used as a snowmobile trail in winter and recently has become part of the Cohos Trail.⁴ There is a clearing at the summit of Dixville Peak which currently offers views focused to the north and east. Another short hiking trail leads up to Table Rock, a dramatic geologic feature to the north of the Peak. There are no similar trails or recreational

³ The elevations of the three project ridges are as follows: Dixville Peak: 3460 feet (1054.6 m); Kelsey/Owlhead Mountain: 3472 feet (1058.3 m); Fishbrook: 2889 feet (880.6 m).

⁴ The Cohos Trail is an informal route maintained by the Cohos Trail Association. It's goal is to establish a 162-mile (260.7 km) trail in northern New Hampshire to the Canadian border (see cohostrail.org).

activities located along the two southerly project ridges, though there is an extensive network of snowmobile and ATV trails in the surrounding forest.



Figure 1: Aerial View of Dixville Peak with Mt. Kelsey behind (right) (VERA Photo)



Figure 2: View to Fishbrook from logging road (VERA Photo)

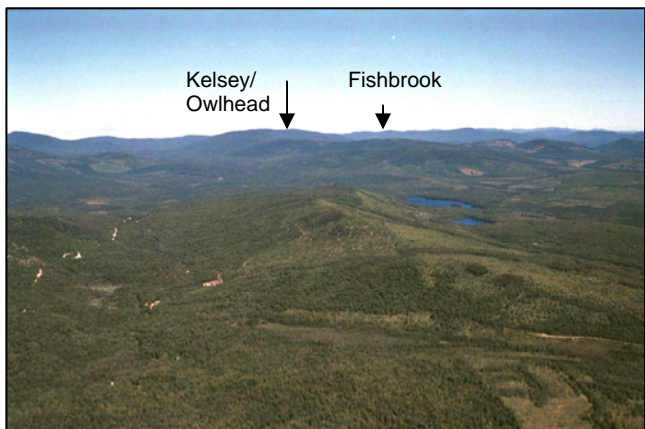


Figure 3: Aerial View to southern project ridges with a ridge west of Dummer Pond in the foreground (VERA photo)

III. Regional Landscape Character

The project area is part of a region known as the Great North Woods, and is located north of the White Mountain National Forest (Kilkenny Unit) and east of the Nash Stream Forest. Dixville Notch is located to the north of the project. The Connecticut River is to the west and the Androscoggin River is to the east. The project would be located within the Unincorporated Areas of Dixville and Millsfield.

Significant regional recreation centers and natural focal points include Percy Peaks, the Dixville Notch area, and the Androscoggin River. There are four state parks – Dixville, Molligewock, Androscoggin Wayside, and Coleman within 10 miles (16 km) of the proposed project, with Milan Hill and Umbagog State Parks located just beyond the study area. Lake Umbagog lies just outside of the study area, but the entire Lake was evaluated due to its recreational and scenic significance.



Figure 4: Balsams Hotel



Figure 5: Dixville Notch



Figure 6: Androscoggin River



Figure 7: North and South Percy Peaks

The Great North Woods is regarded as somewhat more remote, less developed and somewhat less spectacular than the more well-known White Mountains region of New Hampshire. Dixville Notch is perhaps the most well-known landmark within this region, due to the dramatic section of road through the narrow notch surrounded by craggy cliffs. The striking Balsams Grand Resort Hotel situated on Lake Gloriette adds to the scenery as much as the early voting record of the inhabitants of the town adds to the local lore. Recreational facilities associated with the Balsams Resort include the Wilderness Ski Area (alpine), the Panorama Golf Course, and extensive network of hiking, biking, and cross-country skiing trails. Snowmobile and ATV trails are also common throughout the area. The Cohos Trail also traverses the project area.

The Nash Stream Forest is west of the project site and provides undeveloped recreational opportunities such as hunting and fishing as well as hiking and backcountry skiing and snowshoeing. Numerous mountains are within the Forest including Baldhead, Muise, Whitcomb, Long, North and South Percy, Stratford, Sugarloaf, and other minor peaks southeast of Blue Mountain. There are hiking trails to Percy Peak and to Sugarloaf Mountain. Other mountains such as Blue Mountain, West Peak and Goback Mountain are further west and outside the Forest. East of the project are Mt. Metalak, Mt Patience, Signal Mountain, Deer and Cow Mountain. These mountains frequently prevent views of the project ridges from key use features identified, especially from the east, south and southeast.

Colebrook, Groveton, Errol, and Milan are the only town centers or villages within or adjacent to the study area. Highways surrounding the project site that were evaluated for potential views include U.S. Route 3 between Groveton and Colebrook, Route 26 from Colebrook to Umbagog Lake State Park, Route 16 extending from approximately Errol to Milan, and Route 110/110A extending from Route 16 and the Androscoggin River to Groveton. All of these roads are State Scenic and Cultural Byways and Route 3 is part of the Connecticut River National Scenic Byway Program.

IV. Visibility of the Proposed Project

Following is a list of the areas from which the project would be visible. From nearly all areas only portions of the project would be seen. The project would not be visible from Dixville Notch, from the Androscoggin or Connecticut Rivers, or from the four state parks in the 10-mile (16 km) study area (Dixville Notch State Park, Molligewock State Park, Androscoggin Wayside Park, and Coleman State Park). The project would be visible from the fire tower located at Milan Hill State Park, located just beyond the 10-mile study area, but would not be visible from Umbagog State Park.

The viewpoints listed below are illustrated on the Viewpoints Map (Appendix C) and in accompanying photographs in Appendix E. Viewpoint (VP) numbers and the distance to the nearest visible turbine are indicated in the accompanying photographs. Visibility by itself does not necessarily result in significant impacts. Factors such as the proximity of views, the number of turbines in the view, the expectations of property users and the

dominance of the proposed project from important viewing areas will be discussed in the next section.

Turbine Distances and Photo Notations

Distances indicated refer to the distance between the viewpoint and the **nearest visible turbine**. The project ridges are labeled in the photographs below. In some cases, such as on Dixville Peak, the turbines are located on only a portion of the ridgeline and the specific location of turbines is identified as “turbine location”. A more detailed analysis of turbine locations from identified viewpoints including the specific landforms in the view is found in Appendix E.

A. Views from Federal and State Roads and Roadside Picnic Areas

Views of the proposed project from major state and federal roads would be relatively limited with the only significant views occurring along Route 26 east of Colebrook looking toward Dixville Peak, and another sequence of views northwest of Errol looking toward Kelsey/Owlhead Mountain and/or Dixville Peak. Along Routes 3, 16 and 110B there would be some opportunity for quick glimpses of the project from very limited locations. There would be no views through Dixville Notch, from roads adjacent to the Androscoggin River, or from roadside rest areas or parks. There would be no views from Routes 110 or 110A or other State Routes in the area.

- U.S. 3
Visibility is limited to a brief glimpse at the northern end of Colebrook Village to Dixville Peak. Foreground buildings and trees limit the duration of most views to a quick glimpse. Residences in the area may have a similar view. A communication tower on a nearby hill just south of Colebrook is evident.



**Figure 8: View from Route 3 north of Colebrook Village
(VP 1, 9.6 miles (15.4 km))**

- Route 26: Colebrook – Dixville Notch

The most open view toward Dixville Peak is east of Colebrook near Fish Hatchery Road. The road elevation combined with adjacent open fields provides a panorama including Dixville Peak with an unnamed peak in the foreground. This open view continues for about 0.6 mile (1 km) with Baldhead Mountain also coming into view. From this vantage point all or parts of the 8 turbines would be visible (see **Simulation, Appendix F**). Dixville Peak is intermittently visible continuing east in several locations. The rugged northern end of the Dixville Peak ridge descending into the Notch can be seen from several of these vantage points. The turbines would be set back approximately 1.7 miles (2.7 km) from this end of the ridge. Kelsey/Owlhead and Fishbrook are behind intervening mountains and hills and the turbines would not be visible. Closer to Dixville Notch around Kidderville there are intermittent views toward the north end of Dixville Peak including the ski area directly ahead. Only the northernmost turbines along Dixville Peak would be visible. Near the entrance to the Balsams Wilderness Ski Area the project would not be visible, nor would it be visible through the Notch itself.



**Figure 9: View from Route 26 east of Colebrook near Fish Hatchery Road
(VP 3, 8.3 miles (13.4 km))**

- Route 26: Errol – Signal Mountain Road
 Northwest of Errol near the airport open meadows permit views toward a portion of the Kelsey/Owlhead ridge and Dixville Peak ridge. Portions of approximately 3-4 turbines on Mount Kelsey would be visible along with tops of turbines on Dixville Peak. The Owlhead and Fishbrook ridges are hidden behind foreground mountains. Intermittent views continue as one heads northeast with the Kelsey ridgeline most dominant in the view until one reaches the Signal Mountain Road intersection. One of the more scenic views along this stretch is at Signal Mountain Road from which Dixville Peak is viewed across agricultural meadows and an old farmstead (see **Simulation Appendix F**). About 5 of the turbines would be almost entirely visible with 3 partially hidden behind a ridge extending east from Dixville Peak. The view of Dixville ridge continues for 0.6 mile (1 km) along this open field. Beyond this point and continuing north, visibility of Dixville Peak diminishes with glimpses of the tops of turbines possible up to Welch Brook. There would be no views through the Notch itself.



**Figure 10 : Kelsey/Owlhead is seen to the left and Dixville Peak to the right
(VP 17, 6.9 miles (11.1 km))**

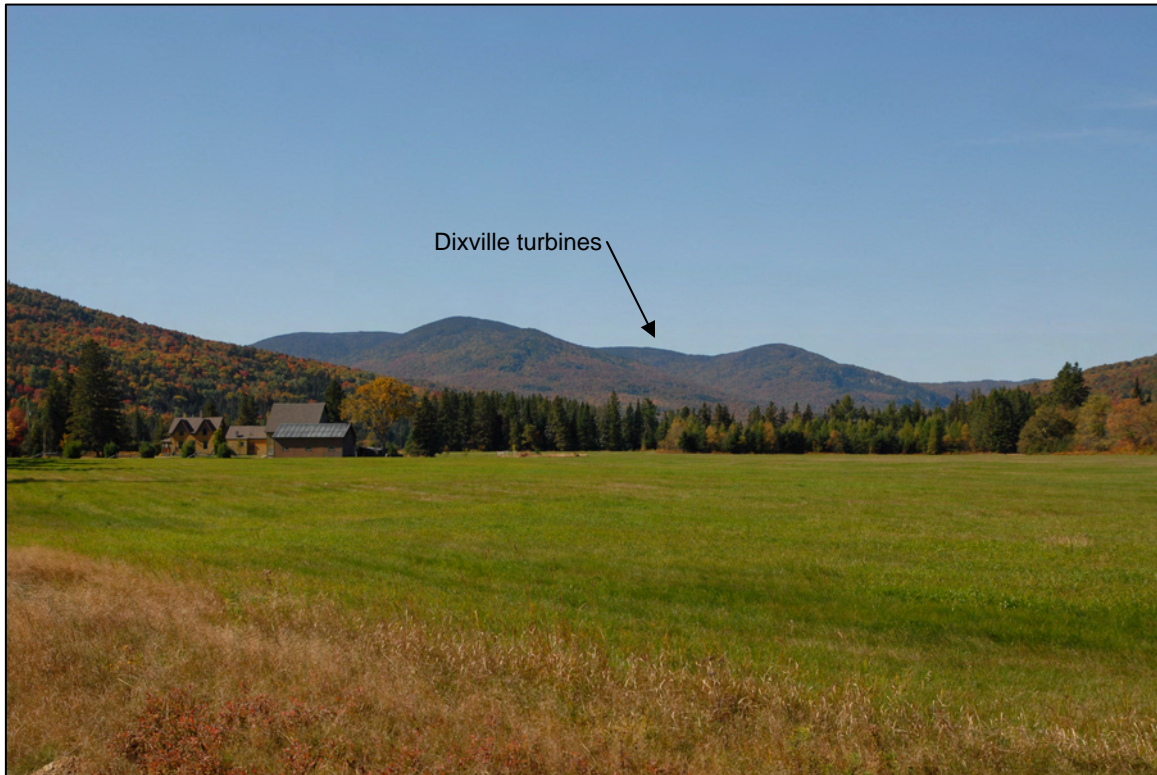


Figure 11: Dixville Peak is seen behind a foreground peak as viewed from Route 26 northwest of Errol near Signal Mountain Road (VP 16, 4.8 miles (7.7 km))

- Route 26: South of Errol
The project is viewed for approximately 0.6 mile (1 km) on Route 26 south of Errol. An opening in the vegetation allows for a view of Kelsey/Owlhead Mountain heading north, followed by views of Dixville Peak as the road changes alignment.



**Figure 12: View from Route 26 south of Errol
(VP 20, 10.1 miles (16.2 km))**

- Route 16
From Route 16 between Milan and Errol, views of the project would be extremely limited with glimpses possible at the Pontook Reservoir causeway toward Fishbrook and the south end of the Kelsey/Owlhead Ridge. The Androscoggin River is a strong focal point along this section of road. The project would not be visible from the Androscoggin Wayside Park or the Mollidgewock State Park (see discussion of Pontook Reservoir boat launch area below).



**Figure 13: View from Pontook Reservoir Boat Launch area
(VP 24, 6.3 miles (10.1 km))**

- Route 110B
There is a short section along Route 110B from which the south end of Kelsey/Owlhead ridge and part of the north end of Fishbrook ridge are lined up within the view. They would be seen briefly heading north near Peabody Hill. This view is not a panoramic or highly scenic viewpoint but is focused along the highway alignment (11.1 miles (17.9 km)).



Figure 14: View from Route 110B looking north toward the Kelsey/Owlhead and Fishbrook ridges (VP 26, 11.1 miles (17.9 km))

B. Views from Secondary Roads

- Colebrook and Columbia

There would be very limited visibility within Colebrook village. In the Stevens Hill area east of Colebrook there are several vantage points looking toward Dixville Peak and occasionally, a portion of Kelsey Mountain. There are several view points from L Forbes Road and Reed Road. From Reed Road views are mostly oriented to the south with North Percy Peak being a distant but distinct focal point. Dixville Peak is a part of some views. From L Forbes Road there is a broad panorama with Dixville Peak and a small portion of Mt. Kelsey visible. Distances range from approximately 6.5 miles (10.5 km) to Dixville Ridge and 8.5 miles (13.7 km) to Mt. Kelsey. The Fishbrook ridge is not visible.

Dixville Peak is also visible from East Colebrook Road at three open and several intermittent locations that are filtered by a row of trees along the road. Open views along E. Colebrook Road include one at the west end, one near the Weir Tree Farm at a distance of approximately 4.6 miles (7.4 km) and a third just before coming into Upper Kidderville.

In the Kidderville area several open and intermittent views toward Dixville Peak were identified on Diamond Pond Road, Golf Link Road, and Munn Road. Some seasonal residences in this area would be located as close as about 2.4 miles (3.9 km) away. Other more distant viewing areas are likely to occur within open meadow areas to the north.

South of Route 26 the Carleton, Marshall and Cilley Hill areas have been developed as residential areas but many open fields remain permitting distant views. There would be several views to Dixville Peak from locations along Fish Pond Road, Marshall Hill Road, and Keach Road at distances ranging from 4.5 to 6.5 miles (7.2-10.5 km) (see Keach Road **Simulation Appendix F**).



Figure 15: Golf Links Road (VP 9, 3.6 miles(5.8 km))



Figure 16: Munn Road (VP 10, 3.2 miles (5.1 km))



Figure 17: East Colebrook Road, Colebrook (VP 4, 4.6 miles (7.4 km))

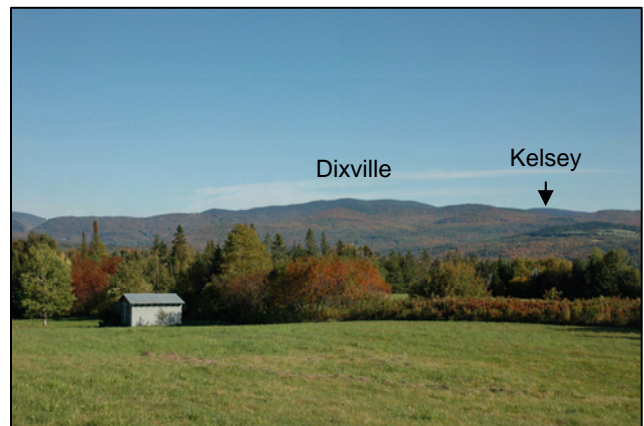


Figure 18: L Forbes Road, Colebrook (VP 5, 6.7 miles (10.8 km))



**Figure 19: Keach Road, Cilley Hill, Columbia
(VP 15, 4.7 miles (7.6 km))**



**Figure 20: Marshall Hill Road, Columbia
(VP 14, 5.4 miles (8.7 km))**

- Dummer

The south end of Fishbrook ridge would be seen in the view from Hill Road on the north slope of Veezey Hill at approximately 6.6 miles (10.6 km) away.



Figure 21: View from Veezey Hill Road (VP 25, 6.6 miles (10.6 km))

C. Views from Parks, Recreation Areas and Hiking Trails

- Dixville Notch Area

As noted the project would not be visible driving through the narrow portions of Dixville Notch, from Dixville Notch State Park or from the Balsams Hotel. Views are unlikely from the Table Rock Trail and many other woodland trails associated with the Balsams Grand Resort Hotel. There would be views toward Dixville Peak from the Solitude Trail, a relatively short hike which is also part of the Cohos Trail and from the summit of Abenaki Mountain. Views from Dixville Peak at the present time are primarily to the north, east, and west. This section has recently been adopted by the Cohos Trail Association as part of efforts to establish a trail through New Hampshire from the Appalachian Trail and into Canada. Portions of this trail also serve as a snowmobile trail in winter.

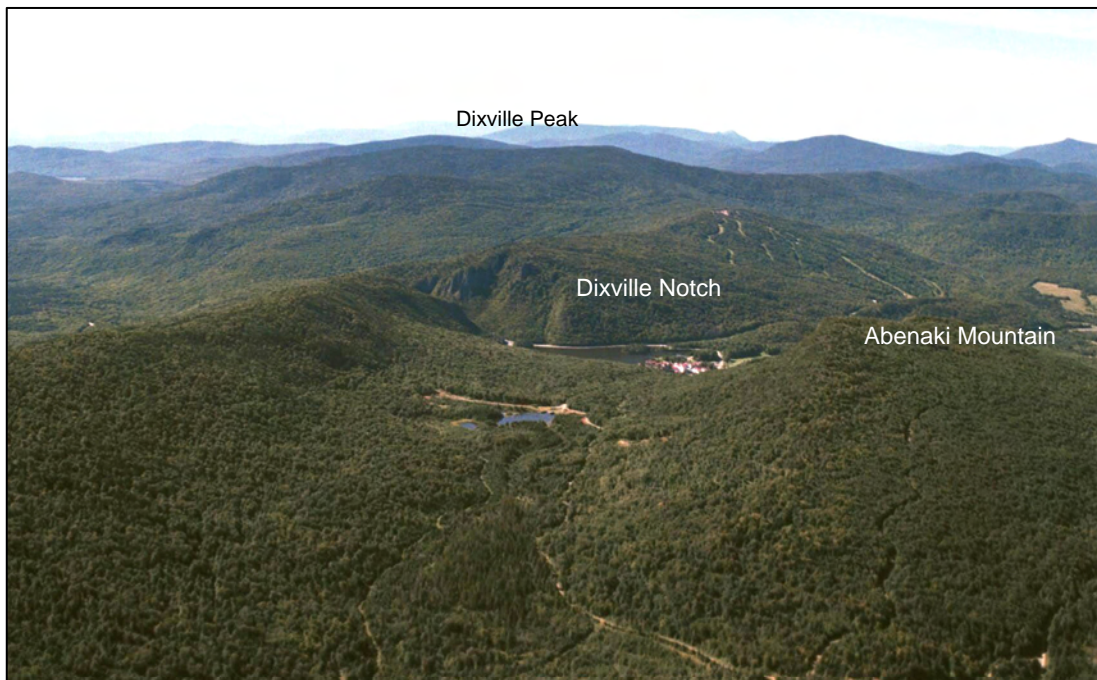


Figure 22: Aerial View with Abenaki Mountain (VP 12) in right foreground. Views from the summit include Dixville Peak but not Kelsey/Owlhead or Fishbrook (VERA Photo)

The Dixville Peak turbines would also be visible from Abenaki Mountain, a moderate hike of 2.5 to 3 miles (4-5 km)⁵. Dixville Peak is also visible from the Panorama Golf Course but none of the other project ridges would be visible. The Golf Course is used by cross country skiers in winter. The Balsams Wilderness Ski Area generally faces north and northwest so that there would be no views of the project from ski trails.

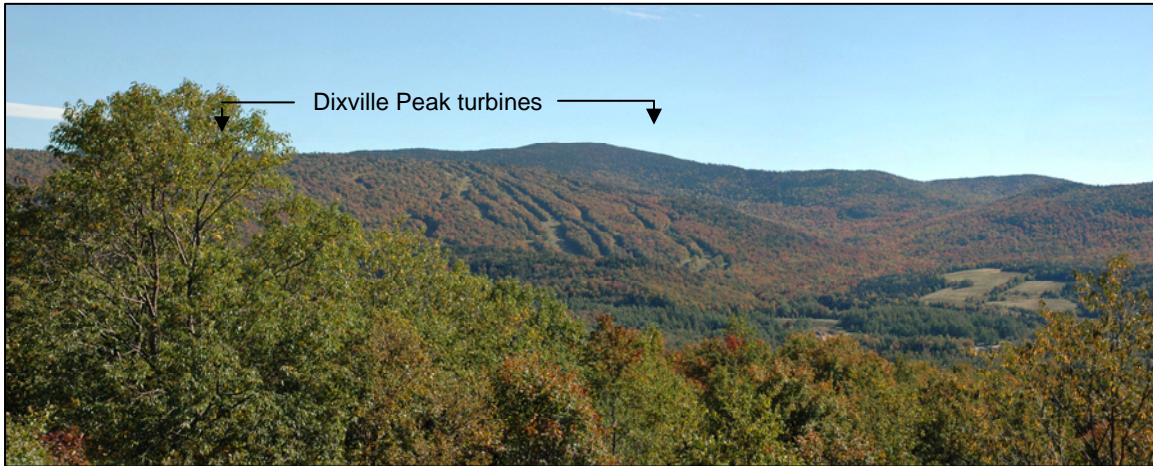


Figure 23. View from Panorama Golf Course. Balsams Wilderness Ski Area is in foreground (VP 11, 2.6 miles (4.2 km))

- Millsfield, Dummer, and Phillips Ponds

Millsfield Pond has approximately 18 camps along the western and southern shores. Portions of both Kelsey/Owlhead Mountain and Dixville Peak are visible from the boat access area and from the southern shoreline. It is likely that there would be views from many camps of at least some turbines along these two ridges (see Millsfield Pond **Simulation, Appendix F**). From portions of the Pond, up to 8 turbines along the Fishbrook ridge would also be visible with up to 27 turbines (some only the tips of blades) along the three ridges possibly being visible. This is one of the few areas from which turbines on all three ridges would be visible. Mt. Kelsey/Owlhead and Dixville Peak are approximately 2.8 miles (4.5 km) and 5.5 miles (8.9 km) away respectively. Turbines on the north end of Fishbrook Ridge would be 2.2 miles (3.5 km) away at the closest point.

The turbines along the southern end of the Fishbrook Ridge would be visible looking north from Dummer Pond at a distance of about 2.3 miles (3.7 km). The turbines along the Kelsey/Owlhead and Fishbrook Ridges would be viewed from Phillips Pond at a similar distance.

⁵ The Balsam's Resort publishes an excellent and detailed map of trails (*Trails for Walking, Hiking, Climbing and Mountain Biking*)



Figure 24. View from Millsfield Pond boat launch. Turbines would extend behind the summit of Owlhead and along the background ridges. Dixville Peak is seen in the distance. (VP 22, 5 miles (8 km))



Figure 25. View from Dummer Pond to Fishbrook (right) and Muise Mountain (left, distant) (VP 23, 2.3 miles (3.7 km))

- Nash Stream Forest

Mt. Kelsey/Owlhead and portions of Dixville Peak would be seen from the summit of North Percy Peak at approximately 10 and 13 miles (16 and 21 km) away (see North Percy Peak **Simulation, Appendix F**). Long, Whitcomb, and Muise Mountains are all located in front of these project ridges and Long Mountain blocks views to the Fishbrook Ridge entirely. On Dixville only 4 turbines would be fully visible with only the blades visible of the remaining turbines. Similarly, from Sugarloaf Mountain, Dixville and Kelsey/Owlhead are visible at distances ranging from 8 to 9.5 miles (12.9-15.3 km) away. Sugarloaf Mountain is accessible by a designated hiking trail but appears to be far less used than the Percy Peak Trail.

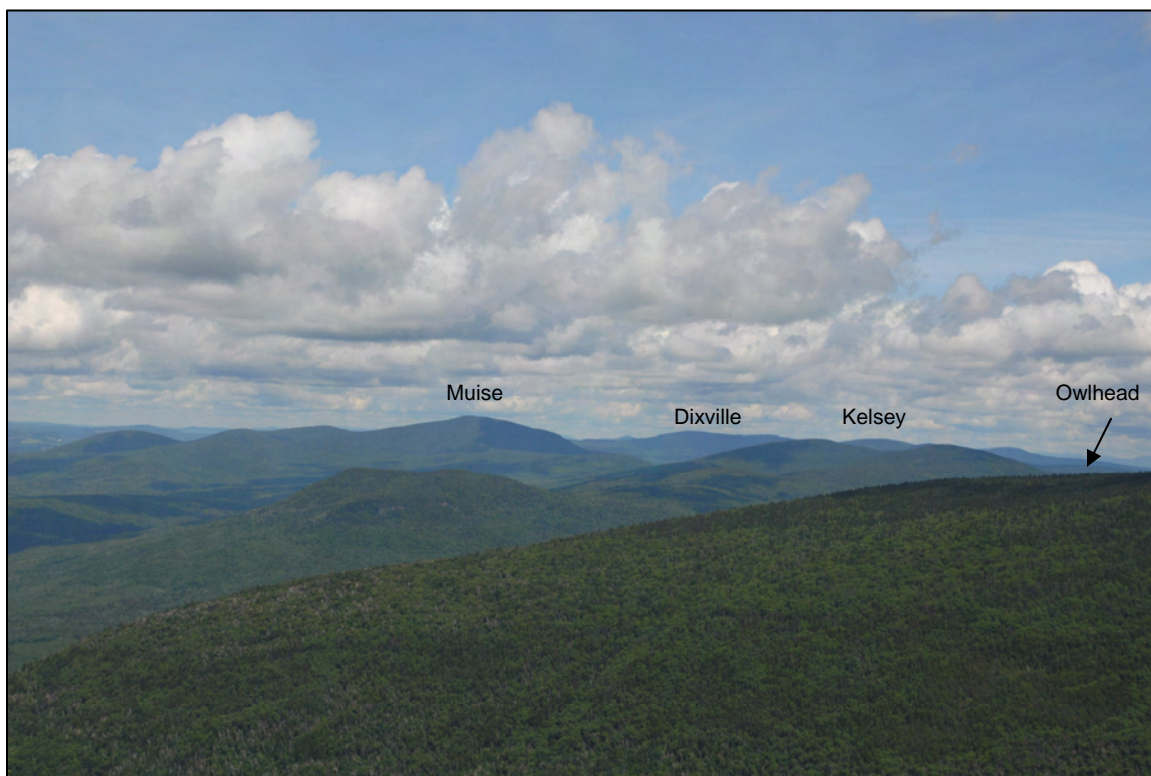


Figure 26. View from North Percy Peak
 Whitcomb Mountain is between Long Mountain (foreground) and the Project ridges.
 (VP 28, 9.4 miles (15.1 km))

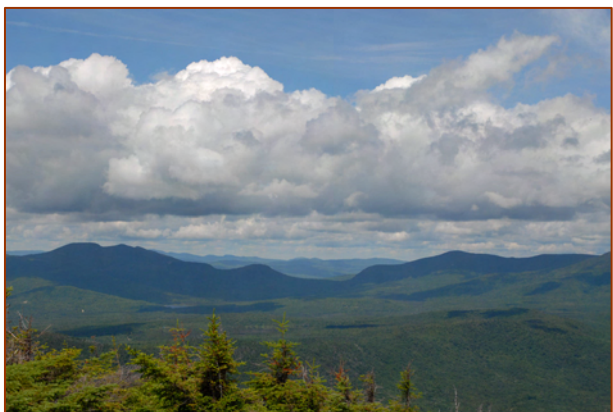


Figure 27: View from North Percy to North



Figure 28: View to Presidential Range from North Percy Peak



Figure 29. View from Sugarloaf Mountain
 Muise and Whitcomb Mountain are between Sugarloaf and the Project ridges (VP 29, 7.8 miles (12.6 km)).

- Errol Area: Akers Pond and Lake Umbagog

Portions of Kelsey/Owlhead Mountain and Dixville Peak are visible from the east side of Akers Pond (7.9 miles (12.7 km)) northwest of Errol. The pond is heavily developed with camps and residences along much of the shoreline so that views of the project are likely from a number of camps as well as the pond itself.

Mount Kelsey/Owlhead and Dixville Peak ridge are visible at distances ranging from 12-15 miles (19.3-24.1 km) from the northern portion of Umbagog Lake but would be blocked by foreground landforms and vegetation in the southern and westernmost portions of the lake. Portions of these peaks can also be seen heading west along the head of the Androscoggin River near Sweat Meadows. There are 38 remote campsites around Lake Umbagog. Views of up to 26 turbines are possible from portions of the Lake itself and from 3-4 remote campsites on the northeastern arm of Lake Umbagog. The campsites are located about 15 miles (24 km) away from the proposed project.



Figure 30. View from Akers Pond
Turbines along Dixville are further north, but may be visible from parts of Akers Pond
(VP 18, 7.9 miles (12.7 km))



**Figure 31. View Lake Umbagog
(VP 19, 12-15 miles (19.3-24.1 km))**



Figure 32: Lake Umbagog looking Northwest



**Figure 33: Lake Umbagog to Mahoosuc and Presidential
Ranges**

- Androscoggin River and Pontook Reservoir Area

The only view of the project area identified along the Androscoggin River is the small section near Sweat Meadows described above.

The south end of Kelsey Mountain and Fishbrook Ridge would be partially visible from the Pontook Dam boat access area and potentially from the Reservoir area west of Route 16. Foreground trees block views from the picnic and information areas.

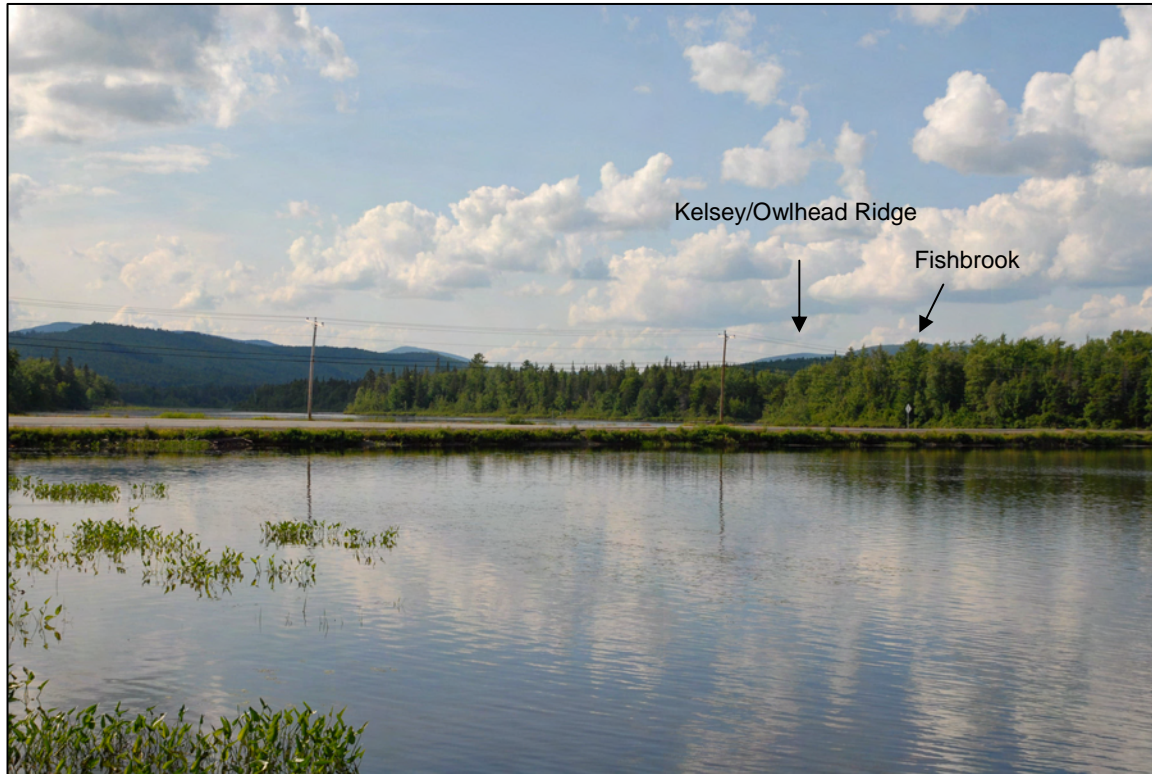


Figure 34: View from Boat Launch at Pontook Reservoir (VP 24, 6.3 miles (10.1 km))

- Monadnock Mountain and Milan Hill State Park

Although outside the 10 mile (16 km) study area, there are two fire towers accessible to the public providing views toward the project area at distances of approximately 11-12 miles (17.7-19.3 km). One is the tower located at Milan Hill State Park, the other on top of Monadnock Mountain in Vermont.

- Snowmobile and ATV Trails

Snowmobiling is a highly popular winter activity and a significant network of maintained snowmobile trails exist through out the area. A network of ATV trails that utilize designated roads or trails was noted in the area to the east of the project ridges. Views along this extensive network are likely from open areas but were not inventoried. The most proximate views would be along Dixville Peak itself.

D. Views from Village Centers and Historic Sites

There would be no views from the village centers of Groveton, Errol, or Milan. Views are possible from upper story windows of structures within Colebrook or from structures located on hill tops, but they are not possible along the downtown village streets. Views would be limited to turbines along Dixville Peak and there are likely to be numerous foreground trees and structures that would dominate views within the area.

None of the sites listed on the National Register of Historic Places within Coos County would have views of the proposed project. Those historic sites occurring within the 10-mile (16 km) study area include the Balsams Grand Resort Hotel, Columbia Covered Bridge, the Stark Covered Bridge and the Stark Union Church. Their historic significance and the potential impacts of the proposed project to these and other historic sites will be described in detail in a report to be submitted by Louis Berger Associates at a later date.

E. Views from Residential Areas

Visibility from homes and camps is likely to occur where property is located near the areas described above. It is not possible or practical to enter private property in conducting visual inventory work, but several areas from which views of the project are likely are described below. In general few homes are located in very close proximity to the proposed project (under 1 mile (1.6 km)). The closest permanent residence is 2.9 miles (4.7 km) away, and is located on Route 26 in Millsfield. Some camps on Millsfield Pond are located as close as 2.2 miles (3.5 km) away (see photos above from State and Local Roads).

- **Colebrook**

From most areas Dixville Peak is the only ridge that is visible in the Colebrook Area (up to 8 turbines). From the higher elevations along L Forbes Road a small portion of Mount Kelsey is visible in the distance. The most proximate views would be from homes located in the Kidderville area and near the Panorama Golf Course, with the closest views from a home along Route 26 at 2.7 miles (4.3 km) away. Other homes located along Route 26 especially those surrounded by open meadows may have views of some Dixville Peak turbines. There appeared to be several homes in the vicinity of Stevens Hill along Reed Road, East Colebrook Road, and L Forbes Road from which the project may be visible at distances ranging from about 5 to 7 miles (8-11.3 km) away.

- **Columbia**

High open meadow areas around Carleton, Marshall and Cilley Hills provide opportunities from views to Dixville Peak as well as many other surrounding mountains including Monadnock Mountain in Vermont. Some homes in the

area would undoubtedly have views toward Dixville Peak at distances ranging from approximately 4.5 up to 6.4 miles (7.2-10.3 km) away.

- **Dixville**
Views from residences in Dixville would be limited to any homes located along Golf Links Road near the Balsams. Views from other areas within Dixville are unlikely.
- **Millsfield**
There would be views toward turbines on Dixville Peak and Kelsey/Owlhead Mountain from some of the camps around Millsfield Pond. Those along the southern and eastern shorelines would have the most direct views at distances of approximately 2.8 and up to 5.5 miles (4.5-8.9 km) away. In addition a few residences along Route 26 in the vicinity of Signal Mountain Road may view turbines on Dixville Peak from 2.9 to about 5 miles (4.7-8 km) away.
- **Odell**
Camps located around Phillips Pond would be able to see turbines located on both the Kelsey/Owlhead and Fishbrook ridges at distances of approximately 2 miles (3.2 km).
- **Dummer**
At least one camp on Dummer Pond would view turbines along the southern end of the Fishbrook ridge at a distance of approximately 2.1 miles (3.4 km) away. Views are possible of some Fishbrook turbines from residences along higher elevations of Veezey Hill.
- **Errol**
Residents along Route 26 between the airport and Signal Mountain Road could have views of turbines on Kelsey/Owlhead Mountain and/or Dixville Peak. Camps and residences along some of the eastern shoreline of Akers Pond would also have views toward Kelsey/Owlhead Mountain and a small portion of Dixville Peak. These views would range from as close as 5.6 miles (9 km) away near Signal Mountain Road to about 8 miles (12.9 km) away on Akers Pond.
- **Milan**
There would be possible views from residences located near Route 110B on Peabody Hill at distances of 11 miles (17.7 km).

V. Visual Impact Assessment

Visibility by itself does not determine the degree of visual impacts. Wind projects will inevitably be visible from numerous locations including recreation areas such as rivers, lakes, ponds and hiking trails. In determining whether or not the views of the project would rise to the level of “unreasonable adverse visual impacts” it is necessary to examine a number of factors which affect the degree of prominence and degree of contrast of a particular wind project. Some factors relate to characteristics of the site and surroundings, while others have to do with characteristics of the project itself. In determining the degree of impact, it is very unlikely that any one of the factors described below would result in a determination of unreasonable adverse impacts. However if there are significant issues with multiple factors, especially those involving very sensitive viewing areas, there may be reasons for concern.

A. Factors Relating to the Site and Surrounding Area

- Viewing Distance

Proximity to a wind project can affect its relative prominence in views. Generally views within ½ mile (0.8 km) are considered to be foreground views and are locations where details can be perceived such as leaves on trees. Middleground views which extend from ½ mile up to 5 miles (0.8-8 km) away are views in which vegetative and land use patterns are visible and in clear weather conditions, even individual trees can be identified. Background views are those over 5 miles (8 km) away in which details become less clear and landforms begin to take on a bluish color.⁶ As one moves away from a wind project, it will generally appear smaller and occupy a smaller part of the overall view.

The only foreground views of the proposed project would be on the summit of Dixville Peak which is accessible to both snowmobiles in winter and via a spur of the Cohos Trail. The summit of Dixville Peak offers scenic views primarily to the north and east but it receives relatively little use and is listed briefly in the current edition of the New Hampshire Appalachian Mountain Guidebook. The alignment may need to be rerouted slightly to accommodate this trail, but efforts are being made to continue to provide access to the summit. Views would change significantly, and include views toward many of the wind turbines, but the distant views would also remain and include numerous peaks throughout the region.

Middleground views (1/2 mile to 5 miles (0.8-8 km)) include Millsfield Pond (2.2 miles (3.5 km)), Dummer Pond (2.4 miles (3.9 km)) and Phillips Pond (2 miles (3.2 km)). There would be views along portions of Route 26 within this distance from the Signal Mountain Road area and filtered views heading east near Kidderville toward Dixville Peak. In the Kidderville area some residences with

⁶ These viewing distances were developed by the U. S. Forest Service and serve as a general guide for understanding the visual characteristics of landscapes and how alterations may affect them.

views may be as close as 2.7 miles (4.3 km), and in the Cilley Hill area of Columbia views would be as close as 4.5 miles (7.2 km) away. Views toward Dixville Peak often include the Balsams Ski area.

More distant views between 5 and 10 miles (8-16 km) away would occur from residential areas in the Stevens Hill and East Colebrook Road area (6-7 miles (9.7-11.3 km) away), from the Carleton and Marshall Hill areas of Columbia (5.5-7 miles (8.9-11.3 km) away), from Veezey Hill (6.6 miles (10.6 km) away), and from Akers Pond (7.9 miles (12.7 km) away). Potential views from Pontook Reservoir northwest of Route 16 would be 6 miles (9.7 km) away. The summit of Sugarloaf Mountain is 7.8 miles (12.6 km) away and the summit of North Percy Peak is 9.4 miles (15.1 km) away. Views from the Colebrook Country Club and from Colebrook village would be at least 9 miles (14.5 km) away. From Lake Umbagog, the project would be 12 to 15 miles (19.3-24.1 km) away.

- Viewer Expectations

Certain landscapes are valued for particular aesthetic experiences such as being surrounded by a natural landscape with little or no evidence of human alteration, seeing a dramatic scenic view, or providing a unique example of a cultural landscape that retains historic settlement patterns. For example, motorized craft are restricted on some water bodies for the express reason of providing a natural setting. Some trails and parks were protected expressly for providing a particular experience. Most landscapes, however, are part of the “working landscape” and there is a general expectation that it will change and evolve incorporating new development and technologies.

Within the study area no documentation has been found that would indicate that viewing a wind project would interfere with particular experiences or values associated with the land. Neither of the two most notable landscapes, Dixville Notch and the Androscoggin River, would be affected by visibility of the project. The ponds in the area have all experienced recent development, are accessible by motorboats and are settings in which logging is an ongoing activity. Percy Peak may be one of the few sites within the area where there are expectations of experiencing a natural appearing landscape. The evolving cultural landscape is evident from the summit beyond the Nash Stream Forest. Kelsey/Owlhead and Dixville Mountains are seen behind numerous foreground and middleground mountains at distances of 9.6 and 12.8 miles (15.4-20.6 km). Similarly Lake Umbagog, though known as a relatively unspoiled lake, has many camps around the shoreline, especially within the areas from which the project would be seen. Because the project would be viewed at well over 12 miles (19.3 km) away, turbines would be visible from some locations but they would not appear prominent.

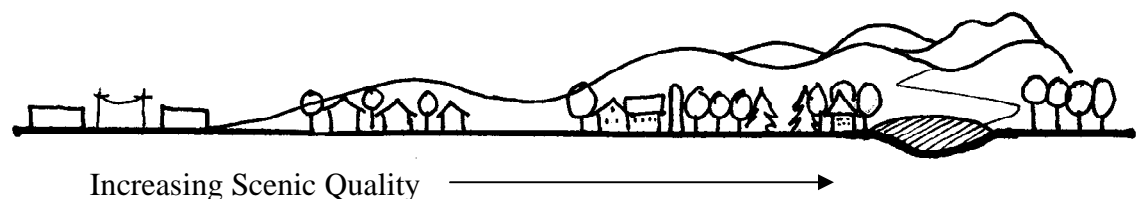
- View Duration

Some views are seen as quick glimpses while driving along a roadway or hiking a trail, others are seen for a more extended duration. When there are extended views especially from significant scenic areas visual impacts may be exacerbated. Examples include hiking trails with views extending over open rocky ridges with highly scenic distant views; or where there are numerous documented highly scenic and sensitive viewpoints throughout a region. There are few areas within the region from which the proposed GRP would be visible over an extended period of time or distance. View durations may be longest on Millsfield Pond from which the project is visible from many areas. This would also be true of some areas on Lake Umbagog but at a much greater distance. Moderately extended views would occur along Route 26 east of Colebrook although these are intermittent with the project coming in and out of view.

- Scenic Quality

Relative scenic quality can be systematically assessed. Exceptional views constitute a valuable resource and can be negatively impacted by inappropriately designed or sited development. Some measures of scenic quality and their relationship to viewpoints within the study are discussed below. Much of the study area can be considered to have high scenic quality, though not the spectacular scenery of an area such as the White Mountains.

Visual Diversity: In general, landscapes with greater visual diversity in terms of topography, vegetation, water features or rock outcrops tend to be more scenic than those that are less diverse. Numerous mountains in this area contribute to the diversity and therefore scenic quality of this region. In some areas open foreground meadows also contribute to diversity as well as permitting views into the distance. (See illustration below.)



Focal Point: Strong and compelling focal points often enhance scenic quality. These tend to be elements that contrast with their surroundings and are often used as landmarks. Examples include a distinctive peak or cultural feature such as church steeple. Within the project study area, North and South Percy Peaks are focal points from certain vantage points due to their distinct shape. Dixville Notch and the Androscoggin River are natural focal points, though primarily viewed at close range. Similarly the Balsams Hotel is a compelling cultural focal point within the region. These natural and cultural features contribute both the diversity and to the scenic quality of the region. The proposed GRP Windpark would not

interfere with these focal points because it would not be seen within views of these features.

Intactness: In the built landscape, development and other changes can erode cultural patterns that detract from scenic quality by increasing visual clutter. Historic settlement patterns usually have observable and clear connections with the natural features of the landscape. Villages clustered compactly and surrounded by rural countryside create a clear sense of order and a recognizable pattern. Strip development and many modern subdivisions tend to erode these historic patterns. Certain forestry practices also alter the sense of intactness of a landscape. Clear cutting as well as development around many of the lakes and ponds in the study area results in a landscape in some areas that is less intact. Within such a “working landscape” a wind energy project is less likely to degrade unique scenic resources provided it does not interfere with important scenic focal points.

- Number of Users

Areas that receive large numbers of users may be considered more sensitive since more people are likely to view the proposed project. Thus views from a state highway may be more important than from a secondary road, or views from a well used trail may be more important than one receiving low attendance. Within the study area most recreational uses are relatively dispersed. Hiking trails and water bodies receive relatively low use compared with those in other parts of the state. Numbers of users must be balanced with other considerations such as the expectations of users.

- Documentation of Scenic or Recreational Importance

When there is public documentation of particular scenic or recreational resources, especially in local, regional or state planning documents, it is an indication of broad public consensus of the value of a particular resource. Documentation that also specifies particular characteristics of the resource that contribute to its scenic or recreational value is especially useful in evaluating significance. Within the study area, Dixville Notch, the Androscoggin River and Nash Stream Forest, as well as several State Parks are generally noted as having public value but there is little specific guidance as to their scenic significance or how development should be evaluated within these contexts in any public planning documents found to date. The project would not be visible from these resources except at a great distance from two peaks within the Nash Stream Forest.

B. Factors Relating to Project Characteristics

The design and visual characteristics of a proposed project can exacerbate or mitigate visual impacts. The following factors need to be evaluated, but must be examined also in terms of the context in which they are viewed as described above.

- **Project Scale**
The height of turbines makes them very visible elements in the landscape. Despite their large size however, it is often difficult to tell just how high they are. In assessing scale the relevant factor is how they appear in the context of their surroundings and whether or not their size overwhelms the height of the mountains on which they are located. In this case, the relative height and breadth of the project ridges tends to help reduce the apparent scale of the turbines. Equally important is their “horizontal scale” or the overall area the project occupies in views (see below).
- **Number of Turbines within the View**
From nearly all viewing locations within the study area, only portions of the proposed project would be viewed. From most of the Colebrook, Columbia and Dixville area, for example, only the Dixville Peak turbines would be visible (approximately 8 turbines). The largest number of turbines would be seen from Millsfield Pond. From camps located on that pond, only the Dixville and Kelsey/Owlhead turbines would be visible, but up to 27 turbines may be visible from portions of the pond itself. From most viewpoints within the study area, however, turbines on a maximum of two of the three ridges would be visible. The numerous mountains within the area help to screen the project ridges from view, and help to reduce the apparent size or scale of the project.
- **Visual Clutter**
One of the reasons many people find wind energy projects attractive is because the repetition of like objects creates a sense of order that minimizes discord. A well designed project will ensure that other infrastructure such as roads, power lines, storage areas and substations are screened from view from important viewing areas. This provides a sense that the turbines are rising above an intact forested landscape. The Granite Reliable Power Windpark has been designed to minimize any off site views of project infrastructure. Summit collection lines will be buried and the existing road network utilized as much as possible. Higher MW turbines result in fewer turbines along the ridges. Only three of the ridges under GRP lease agreements would be developed leaving much of the surrounding area in its current condition.
- **Color**
The white color of wind turbines is preferred by the Federal Aeronautics Administration (FAA) to facilitate visibility to aircraft. Daytime lighting is not required if turbines are white. This color may also make wind turbines more visually appealing as it is a clean and cheerful color rather than the industrial gray of most communications towers for example.

- **Movement**
The rotation of the blades may tend to draw attention to turbines but the very slow rotational speed is not overly distracting and is considered by many to be part of the visual appeal of wind turbines. When they are moving, the blades reinforce the connection to the ridgeline by making the wind observable.
- **Lighting**
Lighting is required by FAA but new standards have minimized the lighting recommended. GRP will work with FAA in order to insure that the numbers of turbines that require lighting will be reduced to the lowest number possible. Lighting will result in impacts to the night landscape, especially in a landscape where current lighting is relatively minimal. Generally at night, however, the lights are seen in isolation and not as part of a larger landscape context. The lights are designed to be visible to airplanes but not to light up the surrounding area so they do not contribute to sky glow. The impacts would be most significant to remote camping areas, but none occur within the viewshed of the proposed project. Most permanent residences would view the project at a distance of at least 4.5 miles (7.2 km) away with views from seasonal residences as close as 2.1 miles (3.4 km). At these distances the lights are likely to be noticeable but not dominant elements.
- **Noise**
Noise studies conducted for the project suggest that there are no receptors that would be close enough to hear the proposed project. At distances greater than 0.5 mile (0.8 km), wind energy projects become very difficult to hear at all.
- **Shadow Flicker**
This is seldom a concern at these latitudes unless homes are in very close proximity to wind turbines, which is not the case here.

C. Relative Visual Sensitivity of Viewpoints

Five viewpoints have been selected for simulations due to their relative sensitivity given the factors discussed above (See Simulations, Appendix F). Millsfield Pond was selected due to its proximity (2.4 miles (3.9 km)) and the number of turbines that would be visible (up to 27 at some locations). Route 26 is a New Hampshire scenic highway with relatively high traffic volume for Coos County. The two areas identified were near Fish Hatchery Road east of Colebrook and near Signal Mountain Road northwest of Errol. Although the project would be visible from other locations along these roads, most other views are intermittent and these two viewpoints were considered to be among the most scenic locations. The Cilley Hill residential area in Columbia was also selected since it is one of the more proximate concentrations of residences with views toward Dixville Peak. The Stevens Hill area in Colebrook also has views toward Dixville Peak, but at a greater distance, and therefore was

considered to have less sensitivity. Finally North Percy Peak was selected as a sensitive area as it is one of the primary hiking destinations within the Nash Stream Forest and one of the few viewpoints of the project from the Forest. Sugarloaf Mountain does not receive the same volume of use, nor is it a distinctive peak as are the two Percy Peaks are. Lake Umbagog could also be considered a visually sensitive area but its significant distance from the project (12-15 miles (19.3-24.1 km)) would reduce impacts.

Sensitivity does not necessarily mean that there would be unreasonable adverse impacts on these viewpoints. The following sections will examine further the degree of visual impacts to these and other viewing areas within the study area and to the region as a whole.

D. Evaluation of Degree of Visual Impacts

1. Degree of Visual Prominence and Degradation of Scenic Resources

A wind energy project due to the size of the turbines, their white color and their location on ridgelines will inevitably contrast with their surroundings and be visible from both residential and recreational areas. In analyzing the degree of visual impact the primary issue is whether or not they will dominate views to such an extent that they significantly degrade the natural and scenic characteristics of a particular location or the region as a whole. In this section we will examine the viewpoints considered to be most sensitive. It should be noted that it is also important to consider areas from which the project would not be visible or have minimal impacts, and these are discussed in the two sections that follow. This section will focus on the locations from which the project would be visible.

Dixville Notch Area

As noted earlier the project would not be visible from Dixville Notch itself, Dixville Notch State Park, the Balsams Grand Resort Hotel, Table Rock Trail or the Sanguinary Mountain Trail. There would also be no views along the “Heritage Trail”⁷ extending from the Balsams to Flume Brook Picnic Area (Dixville Notch State Park) to Huntington Cascades and to Table Rock. The Dixville Peak portion of the project consisting of 8 turbines, would be visible from other surrounding recreation areas including the Panorama Golf Course, some cross country ski trails, the summit of Abenaki Mountain, and from the summit of Dixville Peak itself. A trail known as the Solitude Trail (part of the Cohos Trail) is relatively short and provides panoramic views to the Mahoosuc, Carter, and Presidential Mountain Ranges. This trail joins the Sanguinary Mountain Trail. Although not inventoried, these views would most certainly include Dixville Peak as well. Additionally there will likely be views from some residences in the vicinity of the Panorama Golf Course. These views would also

⁷ This trail is listed as a “Heritage Trail” on the Balsams Grand Resort Hotel trails map. However, this trail has not received official designation according to the NH Trails Department.

be limited to the 8 turbines on Dixville Peak. Both the recreational significance of this area and its proximity to the project make it a sensitive location.

Both the Cohos Trail and a snowmobile trail are combined along the summit of Dixville Peak. Foreground views will dramatically change. The recreational use of Dixville Peak has been relatively minimal in the past and it is not within a protected area or one that is noted as a particular scenic resource. Views tend to be to the north and those views will continue to be available to users. GRP intends to continue to permit these recreational uses, but recognizes that these trails are located on private property and respects the landowners' rights to further manage the property.

As the name implies there are panoramic views from the Panorama Golf Course, which is used in winter for cross country skiing. The Notch descending from Table Rock is a dramatic feature here but Dixville Peak is set further back and is not particularly distinctive in form. The broad sweep of views from the Golf Course means that Dixville Peak occupies a small part of the hills, mountains and valleys visible within the 360° view. Nor is this a viewpoint where one is oriented in any particular direction while golfing or skiing. The project would not be a dominant element within these views, nor would it alter the overall enjoyment of scenery from viewing areas.

Views from private residences within the area are likely to be similar with equally pleasing views to the east, west and north. At most, 8 turbines would be visible and would occupy a relatively small part of overall views. Views are likely to include the ski area as well.

Millsfield and Dummer Ponds

Millsfield, Dummer and Phillips Ponds are the recreation areas with viewpoints closest to the proposed project. Millsfield Pond is likely to receive the greatest impacts due to a combination of its proximity, the number of camps around the pond, and the number of turbines visible. Up to 13 turbines from camps along the Kelsey/Owlhead Ridge with another 8 along Dixville at about 5 miles (8 km) away could be visible from a number of camps. From some locations in the northeastern portion of the pond up to 27 turbines could be visible. Millsfield Pond is in a privately owned working forest and not on publicly protected land. It is a context in which development, active logging, and motorized craft are part of the foreground setting. Because there would be no turbines located on the summit, the turbines appear behind and are partially screened by the Owlhead summit. Views around the pond will continue to include Mt. Metalak, Signal Mountain and other surrounding hills that will be undeveloped.

From Dummer Pond only the turbines along the southern end of the Fishbrook Ridge would be visible and most likely only from the southern end of the pond. The turbines would be seen receding into the distance and would occupy a very small part of the view.

Route 26

As a State Scenic Highway, Route 26 is one of the primary roadways by which both visitors and local residents view the area. As noted above, the project would not be visible from the most scenic and sensitive portion of this roadway through Dixville Notch. Other portions of the highway are characterized by mixed land uses including newer development in some areas. Views are generally intermittent with long stretches where the project would not be visible. The two most scenic locations and those from which the project would be most visible are the two Simulation Points (see Appendix F) at Fish Hatchery Road east of Colebrook and Signal Mountain Road northwest of Errol. These two viewpoints are characterized by relatively intact foregrounds with Dixville Peak visible almost directly ahead. In both views a maximum of 8 turbines would be visible. Both views also include other surrounding mountains that would remain undeveloped. Although these can be considered to be views of high scenic quality they are not distinctive or protected landscapes and the addition of the turbines is unlikely to significantly diminish the enjoyment of the views.

Colebrook and Columbia Residential Areas

The Carleton Hill, Marshall Hill and Cilley Hill areas of Columbia and the Stevens Hill, East Colebrook Road, and Upper Kidderville areas of Colebrook are characterized by numerous open meadows that make distant views possible. The residential areas in Upper Kidderville (Colebrook) and Columbia are the most proximate to the project with viewing distances ranging from 3.4 miles away in the Kidderville area and 4.5 to 6 miles (7.2-9.7 km) away to the Cilley Hill Area. Views of the project would be limited to the turbines on Dixville Peak (8 turbines). Views throughout much of the area include numerous mountains to the south and east within Nash Stream Forest as well as views to the north and northwest including Monadnock Mountain. The numerous mountains within the view, some located at greater proximity than Dixville Peak tend to reduce the prominence of the Dixville Peak turbines. Dixville occupies a relatively small part of overall views and the turbines occupy only a portion of the Dixville ridgeline which is a generally horizontal in form, not a distinctive shape.

From most of Colebrook views are from an even greater distance. The views on L Forbes Road include a broad panorama of which Dixville Peak occupies a relatively small part. From East Colbrook Road views from the Weir Tree Farm are more proximate (4.6 miles (7.4 km) away) and include views toward the Balsams Ski Area, Dixville Peak as well as to the mountains to the South within Nash Stream Forest. Given the broad extent of views, within this area, the turbines on Dixville Peak would not be unreasonably prominent.

Nash Stream Forest, Percy Peak and Sugarloaf Mountain

Views within Nash Stream Forest would be extremely limited with the exception of the two open summits accessible by hiking trails. Of these North Percy Peak is the most well known and receives the highest use. The Fishbrook Ridge is

blocked by Long Mountain so that only Kelsey/Owlhead Mountain and Dixville Peak are visible at distances ranging from 9.4 to over 13 miles (15.1-21 km) away. Only about 4 turbines would be visible on Dixville, and the blades of the other 4. The significant distance along with the dominance of numerous other closer mountains in the view would reduce the prominence of the proposed project. The most notable mountains within the view are the Presidential and Mahoosuc ranges with their jagged and distinctly rugged profile. The project ridges by contrast are not particularly notable features within the view.

Akers Pond

Kelsey/Owlhead Mountain and the southern end of Dixville Peak are visible behind foreground hills from Akers Pond. The two ridges are the only two distant mountains seen in views from the pond. Some camps and residences along the eastern shore will be impacted but the distance away combined with a developed foreground setting will tend to compete with distant views and reduce the prominence of the project from this location.

Lake Umbagog

Although Lake Umbagog is at a considerable distance from the proposed project (12-15 miles (19.3-24.1 km)), it is regarded as a relatively wild and scenic lake. Simulations are difficult to do at this distance since the turbines appear so small, but it is a viewing area deserving of some further assessment. Only turbines on Kelsey/Owlhead Mountain and Dixville Peak would be visible and only from the northern end of the lake. The few remote campsites from which views to the Kelsey and possibly some Dixville turbines would be possible, are 15 miles (24.1 km) away. The project would not be visible from Lake Umbagog State Park, and for most kayakers, who tend to stick to the shorelines, bays and marshes; the project would be minimally visible. Views around the lake include many mountains with the Mahoosuc and Presidential Ranges having the most dramatic profile. Other foreground hills and mountains tend to be dominant features. The significant distance of the proposed project combined with the fact that it would occupy only a tiny portion of the views around the lake, will significantly reduce its impacts to both camp owners and boaters

2. Visual Impacts to Scenic Resources of Statewide Significance

There would be minimal visibility of the proposed project from any State scenic and recreational areas. None of the viewing areas are publicly documented as having high scenic or recreational values for which a natural appearing setting is critical to the enjoyment of the resource. There would be no visibility from Dixville Notch, the Androscoggin River or the Connecticut River, or from the State Parks within the study area including Dixville Notch State Park, Mollidgewock State Park, Androscoggin Wayside State Park or Coleman State Park. There would also be no visibility from Lake Umbagog State Park located just outside the study area but views from the fire tower at Milan Hill State Park are likely. At 11 miles (17.7 km) away views of the project would occupy a very

small part of the overall panorama. North and South Percy Peaks and the Presidential and Mahoosuc Ranges are likely to be the most compelling elements within that view.

Of the State and National Scenic Highways in the area there would be no views from the Stark Scenic and Cultural Byway and very minimal views from Route 16. Visibility from only Route 26 would be more significant. The scenic designations of these highways do not provide guidance as to particular resources of value nor do they restrict development. According to the New Hampshire Trails Bureau, the only designated Heritage Trail in the study area is along the Connecticut River and there would be no views from the River or any associated recreational areas. The Balsams Resort Trail Map indicates a “Heritage Trail” extending from the Hotel to the Flume Picnic Area and circling around to Table Rock. There would be no views from this trail. The North Country Regional Land Use Plan does not identify particular scenic areas which should be protected (see additional discussion of this Plan below). Views from the Nash Stream Forest would be relatively minimal.

3. Visual Impacts to the Region as a Whole

The project surroundings include an abundance of mountains, many of which would block views of the project from much of the study area. For example nearly all of the Route 3 and Route 110 valleys to the west and south of the project would not be able to view the project. Views are extremely limited to the south east as well due to intervening ridges. The project would not be visible from any of Coos County’s notable historic sites. In most areas from which the project would be seen, only portions of the project would be visible. As noted above, it would not be visible from the areas of greatest scenic and recreational significance within the region. There will undoubtedly be impacts to views from Route 26 and from some residential areas, but overall the level of visual impact would be reasonable.

4. Mitigation Measures

A well sited and designed wind project should not require mitigation measures. By contrast, a poorly sited project may not be able to be adequately mitigated through design and micro-siting techniques. Overall site selection appears to work well given the analysis above. As the project has been refined efforts have been made to minimize the impacts of the proposed project within the following areas:

- Turbine Selection: most turbine designs and colors are relatively similar. Modern turbines have been able to increase power output with little increase in overall size of the turbines. This means that a fewer number of turbines can produce the same or more electricity than with older 1.5MW technology. The greater spacing of turbines results in a less cluttered appearance.

- Access and Summit Road Design: Roads have been designed to minimize required grading and therefore vegetation removal. The road design will ensure that turbine bases, pads, and roads would not be visible off site.
- Collector and Interconnector Line Siting: Collector lines located along the ridgetops will be located underground. The project siting near an existing transmission line has minimized the length of additional electrical transmission lines that would be required. Siting of the interconnector line corridor has been designed to reduce any off-site visibility of power line structures or of the cleared right-of-way from sensitive viewing areas.
- Substation and Switchyard Siting and Screening: the one substation and one switchyard would be located well away from publicly viewed areas. Additional plantings will be provided to screen the substation from view if necessary.
- Siting and Design of Storage Areas and other Support Structures: Temporary and permanent storage areas have been located within areas of active forest harvesting and will have minimal visual impacts.
- Recreational Access to Site: Recreational access to Dixville Peak will be retained for both snowmobile users and for hikers on the Cohos Trail as long as they do not interfere with the operation of the wind project.

5. Compliance with State and Regional Land Use Regulations and Standards

The proposed project must comply with NH RSA 162-H of Title XII concerning Energy Facility Evaluation and Siting. The following criteria of the Site Evaluation Committee are addressed.

- *(b) Will not unduly interfere with the orderly development of the region with due consideration having been given to the views of municipal and regional planning commissions and municipal governing bodies.*
- *(c) Will not have an unreasonable adverse effect on aesthetics,[historic sites, air and water quality, the natural environment, and public health and safety are addressed in detail in other reports]*

As noted, the SEC will consider local and regional planning and regulatory documents. Noble Energy representatives have been working closely with local Select Boards, and the North Country Council as well as other interested groups as the project has progressed. They will continue to work with the public and official representatives after the permit application is filed.

The only formal planning document affecting the region is the North Country Regional Land Use Plan which is general rather than prescriptive in nature. It

does however include the following discussions of existing resources and statements of goals and objectives with regard to the character of the area and scenic resources. None of the statements provides specific guidance that would prevent or encourage development generally or a wind energy project in particular in the area proposed.

Pg. 62: Chapter VI Cultural Resources

Introduction

The special way in which people have interacted with the natural environment over time has resulted in a complicated cultural layering that reflects the styles, concerns, livelihoods and ideologies of many areas. The resulting cultural environment: the historic buildings, sites, landscapes and scenic vistas, work together to evoke a “sense of place” that gives a community its identity. Community character is partly concrete, visible and measurable, as well as intangible: physical images of the way life has been and is now, combine with memory, spiritual and aesthetic value to give resonance to an area. The identification of these vulnerable elements is necessary before taking measures to plan for change, influence its scale, and mitigate the nature of its impact on the character of the North Country.

Pg. 75: Chapter VII Policy Statements, Goals and Objectives

Land Use

Goals

Land Use/Development

The primary goal of the North Country Council is to assist communities in providing for the needs of the present and future residents of the region while recognizing that the resulting development must co-exist with and complement the existing manmade and natural environment.

3. Encourage communities to utilize existing structures in order to retain the economic and architectural assets of the community. Outlying intensive commercial use that might reduce the attraction of the growth center should be discouraged.

4. Encourage communities to provide for a full mix of land uses including residential (both single and multi-family), commercial, agricultural, industrial, planned unit development, institutional and recreational.

Critical Resources

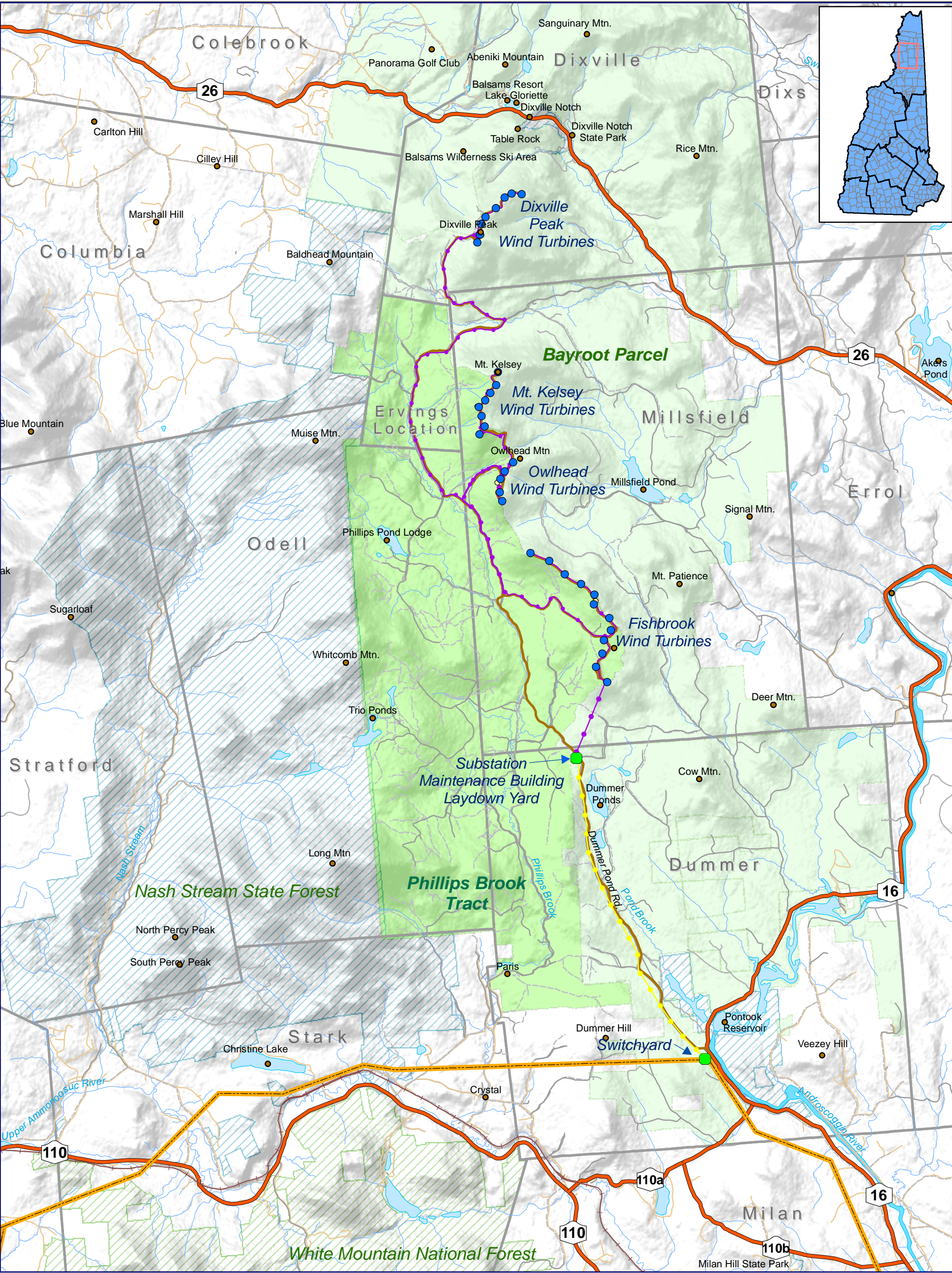
4. Encourage communities to protect scenic vistas for the residents and visitors/tourists.

VI. Conclusions

The proposed project would have adverse visual impacts from a number of viewing areas. That is to say, it would appear to be a contrasting element in views that now include relatively undisturbed ridges and in some cases a predominantly natural-appearing landscape. The proposed project would not result in unreasonably adverse visual impacts, however. Its visibility throughout the region would be relatively low, especially from some of the major regional recreational focal points such as the Androscoggin River and from Dixville Notch and its surrounding woodland recreation areas. None of the viewing areas is publicly documented as having high scenic or recreational values for which a natural appearing setting is critical to the enjoyment of the resource. The project would be viewed at a considerable distance (over 9.4 miles (15.1 km)) from two of the more sensitive viewing areas in terms of public value, Percy Peak and Umbagog Lake. The project would not interrupt or detract from existing scenic resources within the area. In nearly all views only a portion of the project would be visible. This is a diverse area with numerous hills, mountains and rivers. The project would not appear as a prominent element within the region, nor would it interfere with the enjoyment of the many scenic views and recreational resources in the area.

APPENDIX A

PROJECT MAP



APPENDIX B

VIEWSHED ANALYSIS

VIEWSHED METHODOLOGY

Viewshed maps were created using industry standard methodologies and software in order to document the visual impact of the wind turbines by identifying locations where portions of one or more turbines will be visible. Viewshed maps are created using descriptive information specific to the project turbines and a digital elevation model in the WindPRO software program. Line-of-sight calculations are made from each point in the specified calculation area to the tip of the turbine blades to determine how many turbines or portions of turbines are visible from any given location. Two viewshed calculations are generated, the first assumes a bare earth scenario where no vegetation is considered and the only obstructions are from foreground topography. The second calculation considers all areas identified by the US Geological Survey's National Land Cover Dataset (NLDC) as being covered by at least 20% evergreen, coniferous, mixed forest, or forested wetlands to be impenetrable to view. These two result layers are superimposed on each other on a background map to illustrate areas visible both with and without the influences of canopy cover. Areas with forest canopy are shown in green shading on the viewshed map while open areas such as meadows, ponds or lakes are shown with tan shading.

APPENDIX C

VIEWPOINTS MAP

APPENDIX D

TABLE OF VIEWS

VIEWPOINTS TABLE

The following table describes characteristics of the five viewpoints which were selected as simulation points.

Viewpoint #	Location	Proximity To Project miles ¹	# Of Turbines ²	# of Viewers ³	Scenic Quality ⁴	Documented Significance ⁵	Notes
3	Route 26 Fish Hatchery Road (Colebrook)	8.5 (13.7 km)	8	High	High	State Scenic Byway	Open foreground meadows permit views toward Dixville Peak with other lower foreground mountains and hills. Foreground views in simulation location relatively intact but mixed commercial/residential development visible in other locations.
15	Keach Road Cilley Hill (Columbia)	4.8 (7.7 km)	10	Moderate	Moderate - High	No Documentation	High open meadows in the Cilley and Marshall Hill area contribute to scenic quality and permit distant views to many mountains in the area. Dixville Peak is visible in many views along with Baldhead and Muise Mountains
16	Route 26 Signal Mountain Road (Millsfield)	5.3 (8.5 km)	8	High	High	State Scenic Byway	Along Route 26 between Errol and just north of Signal Mountain Road Dixville Peak and some of Kelsey Mountain are seen intermittently. The simulation view is one of the most scenic points with the open meadow and farmstead in the foreground and Dixville Peak beyond.
22	Millsfield Pond (Millsfield)	2.7 (4.3 km)	15 (up to 27 from pond)	Low - Moderate	Moderate - High	No Documentation	Views would include turbines along portions of both Dixville and Kelsey, with some turbines on the Southern Kelsey Ridge visible from the Pond. Relatively developed pond with industrial forestry activities evident in surrounding hillsides.
28	North Percy Peak Nash Stream Forest (Stratford)	9.5 (15.3 km)	20	Low	High	Noted in Appalachian Mountain Guide	Dixville and Kelsey are seen at a considerable distance with numerous foreground mountains blocking views to the Southern Kelsey Ridge. Views to the Presidential and Mahoosuc Ranges are most dramatic

¹ Proximity is measured by the distance to the closest turbine.

² The number of turbines represents all potentially visible parts of turbines which may include only tips of blades.

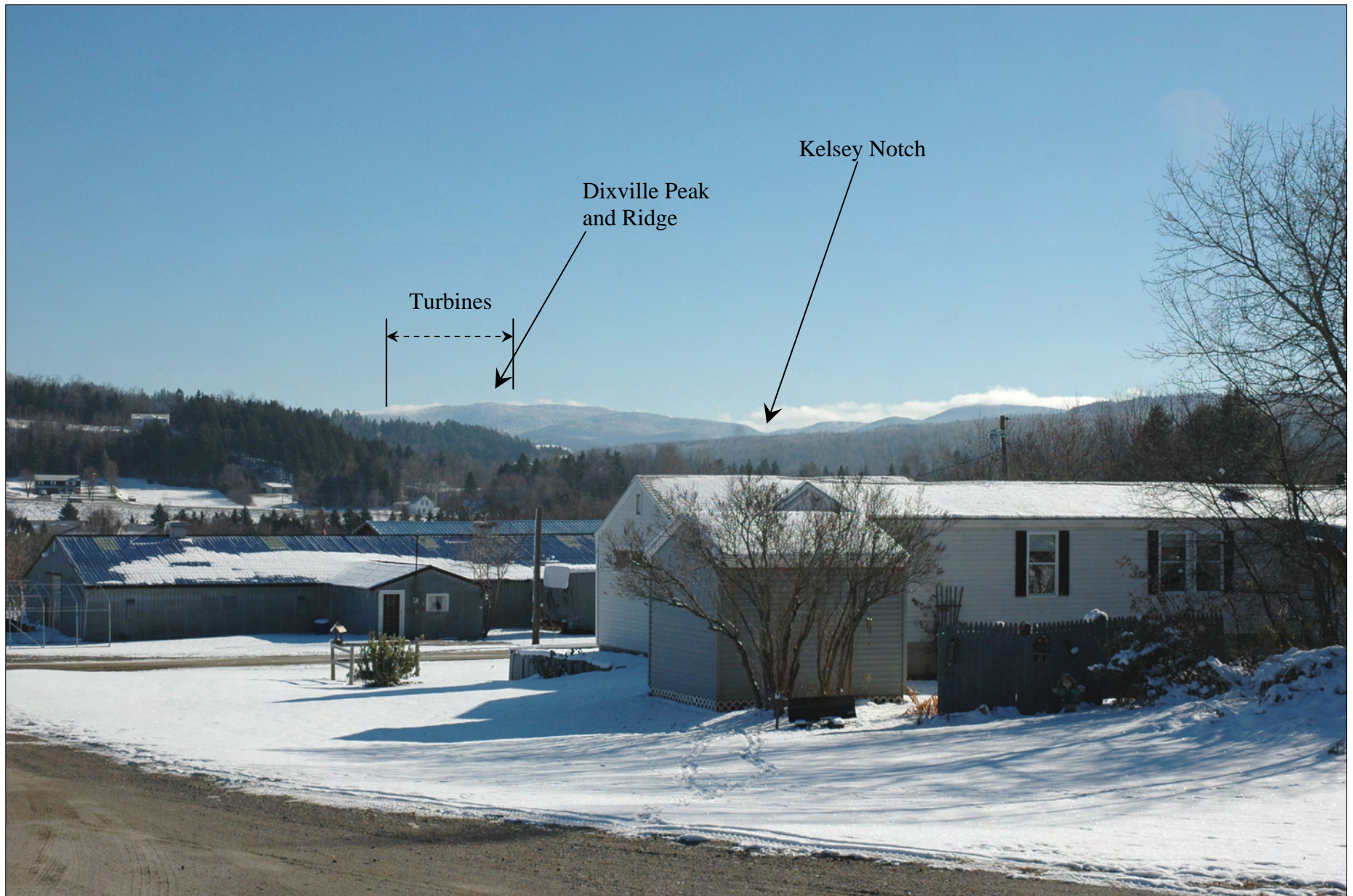
³ The number of viewers is a general figure based on the relative use of a viewpoint in comparison to similar use areas in Northern New Hampshire.

⁴ Scenic quality ratings are described in more detail in the Report; they range from Low or Degraded, Moderate, High to Exceptional for outstanding views with intact foregrounds.

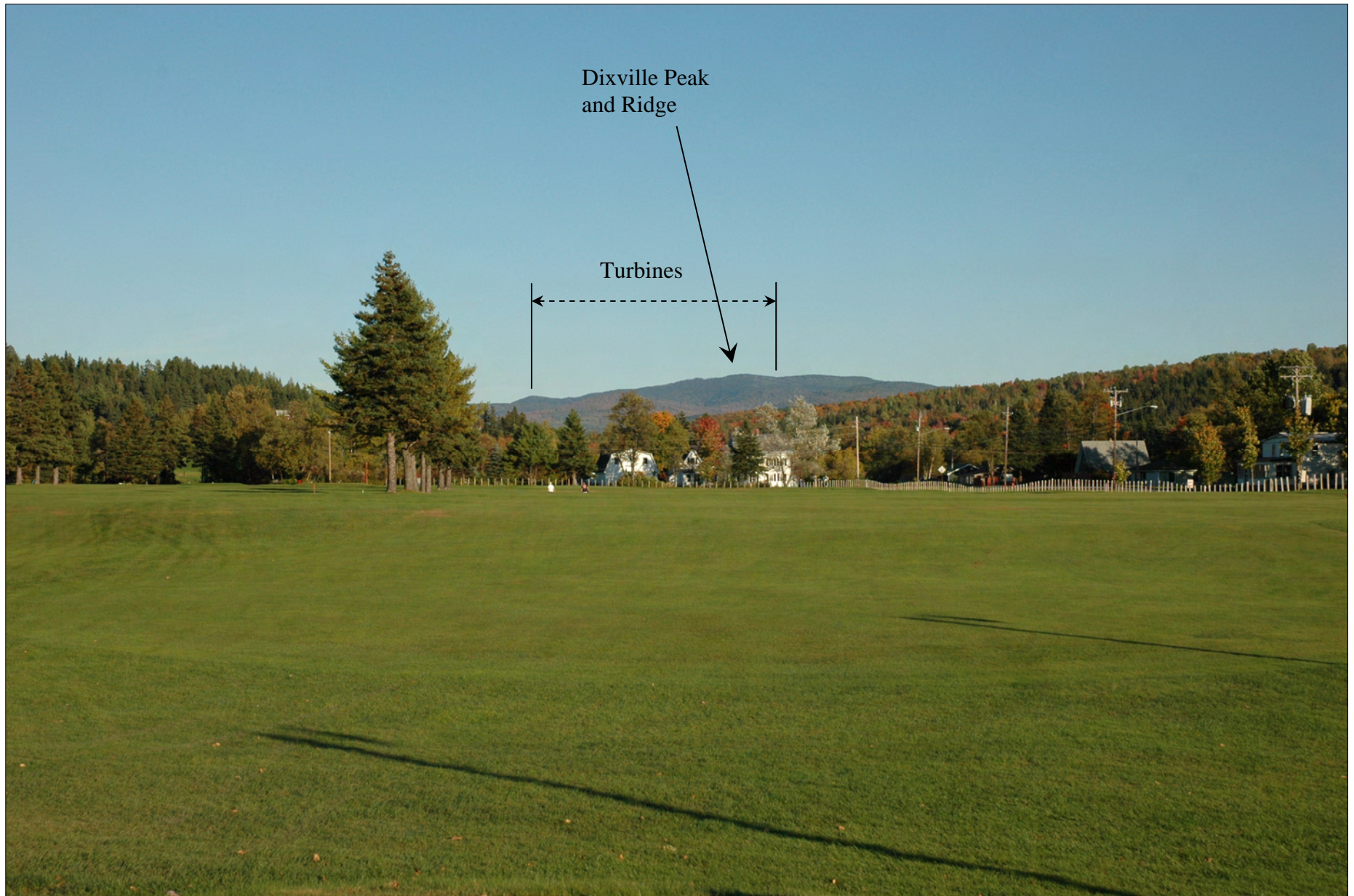
⁵ Documentation includes publicly adopted planning or legal documents in which the resource/area is specifically identified; other types of documentation are noted also.

APPENDIX E

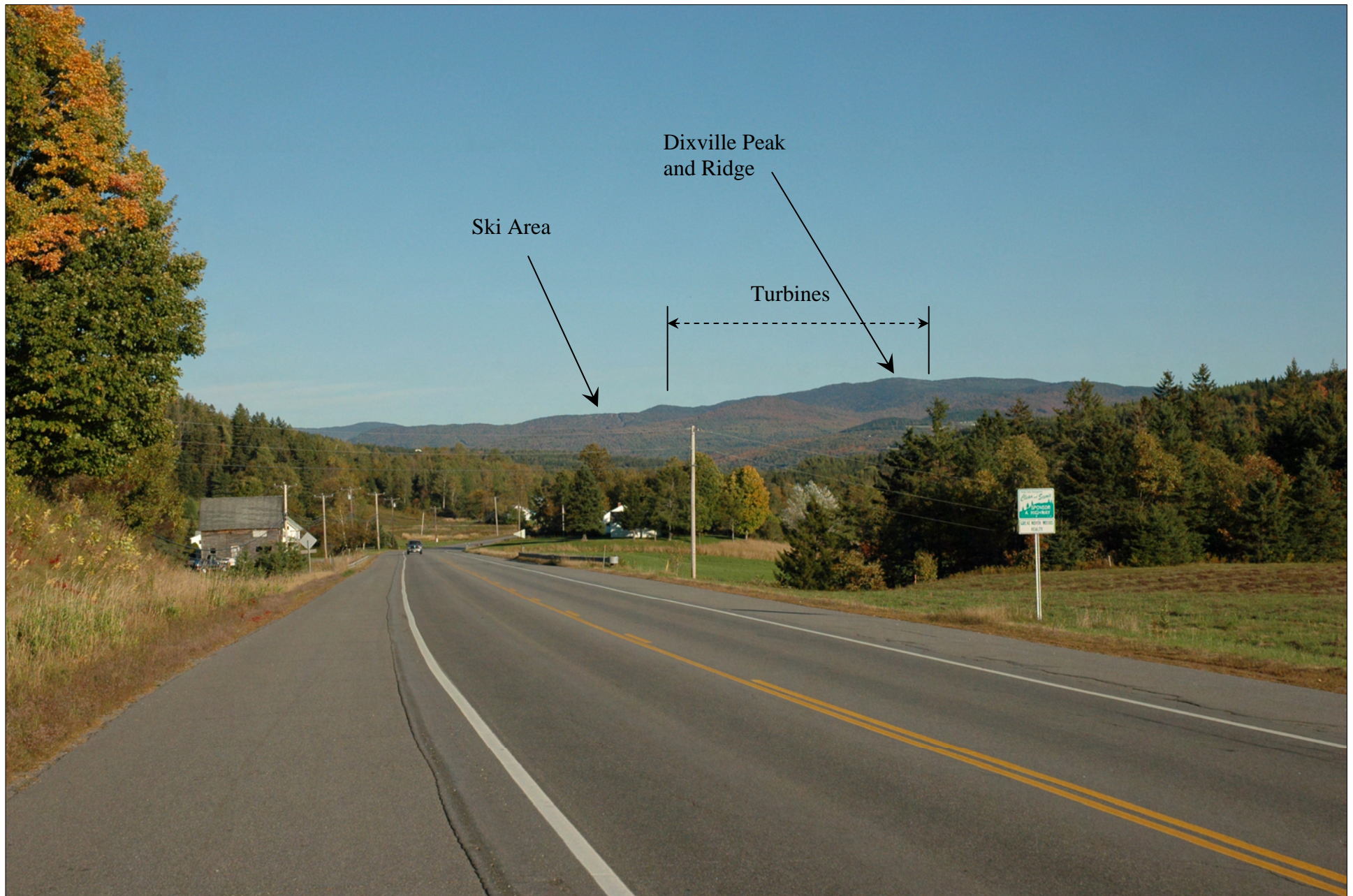
**VIEWPOINT
PHOTOGRAPHS**



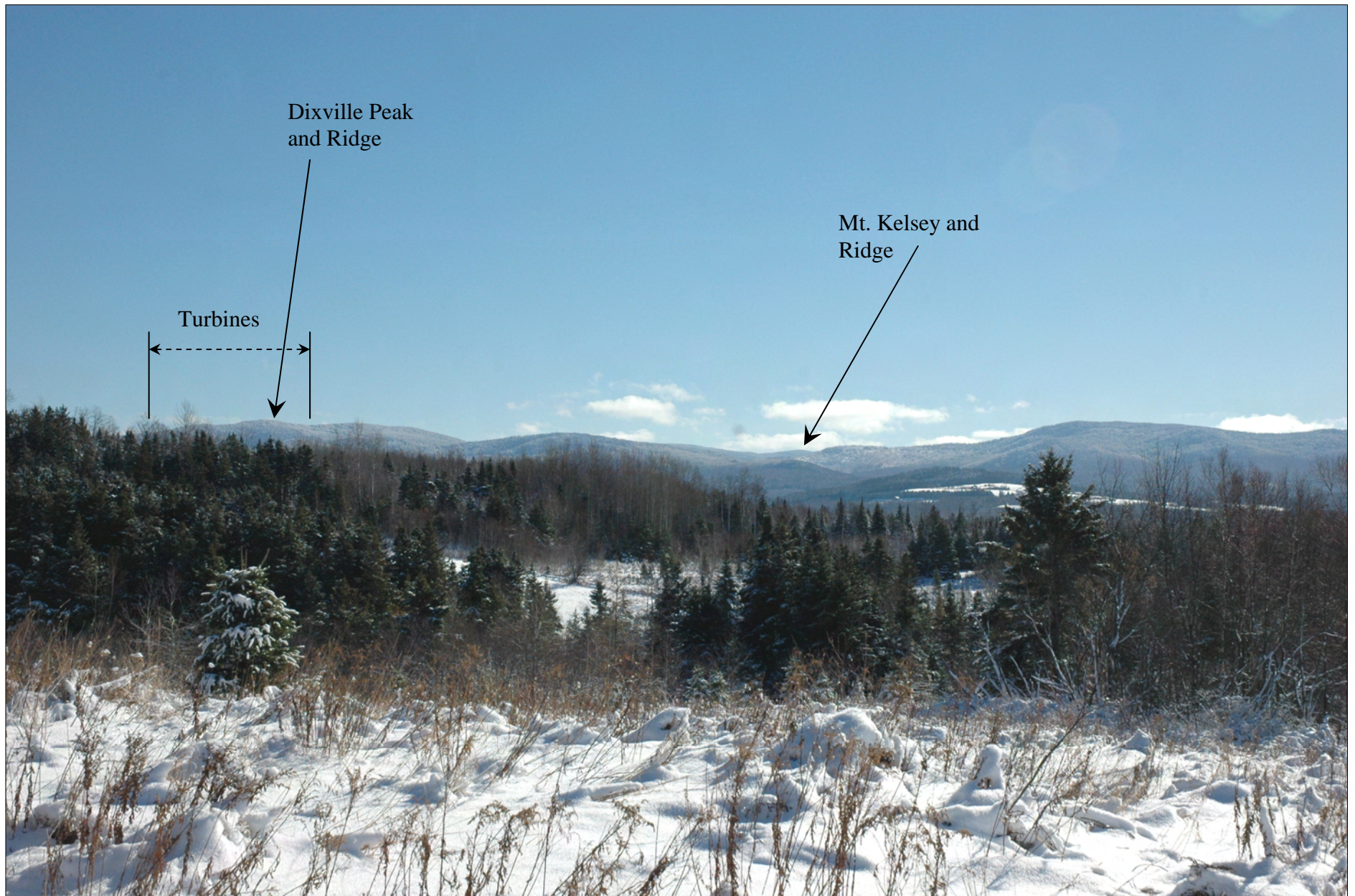
VP 1 – Highway 3, Colebrook Village (9.6 miles (15.4 km) from nearest turbine)



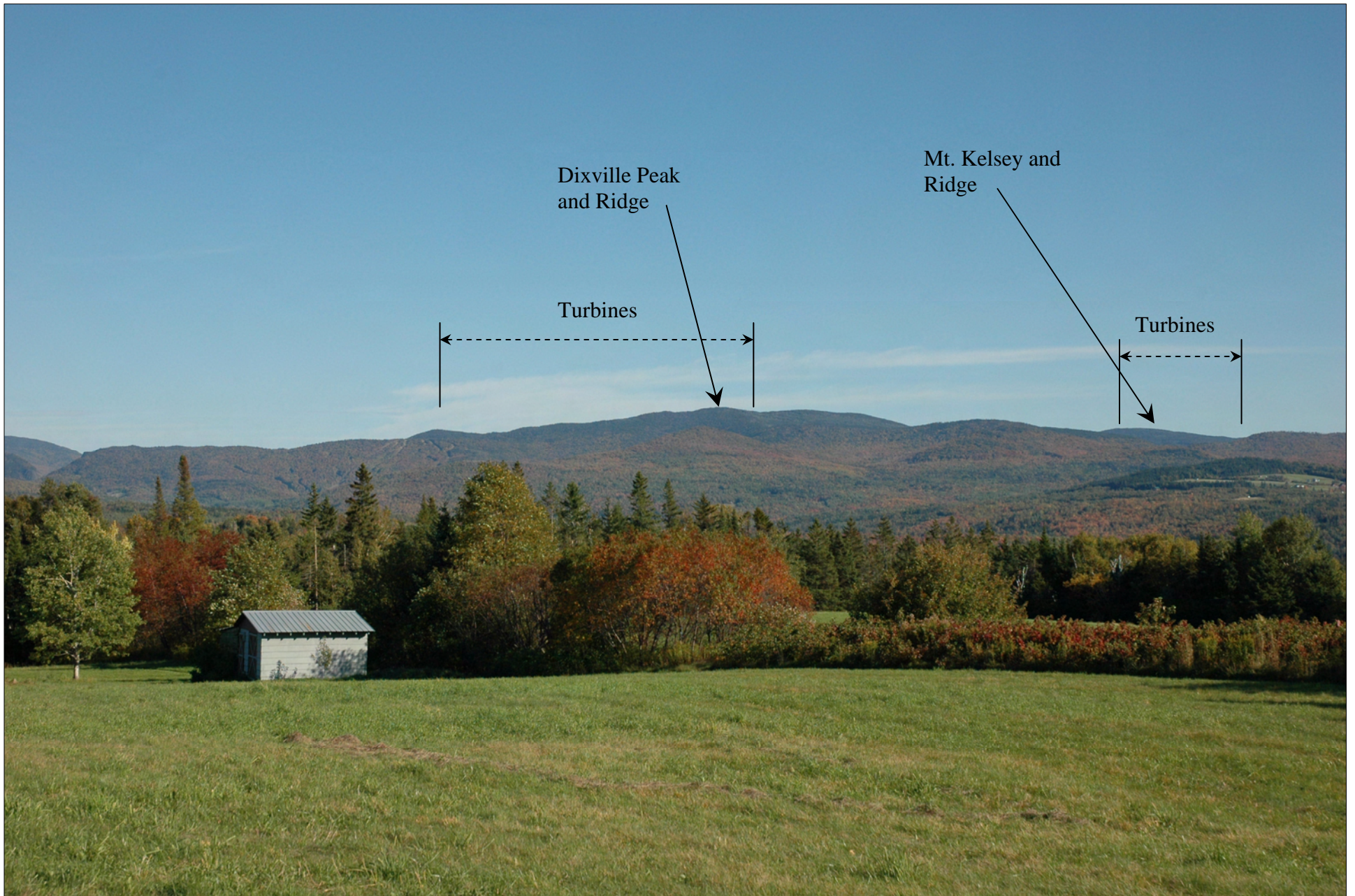
VP 2 – Colebrook Country Club (9.2 miles (14.8 km) from nearest turbine)



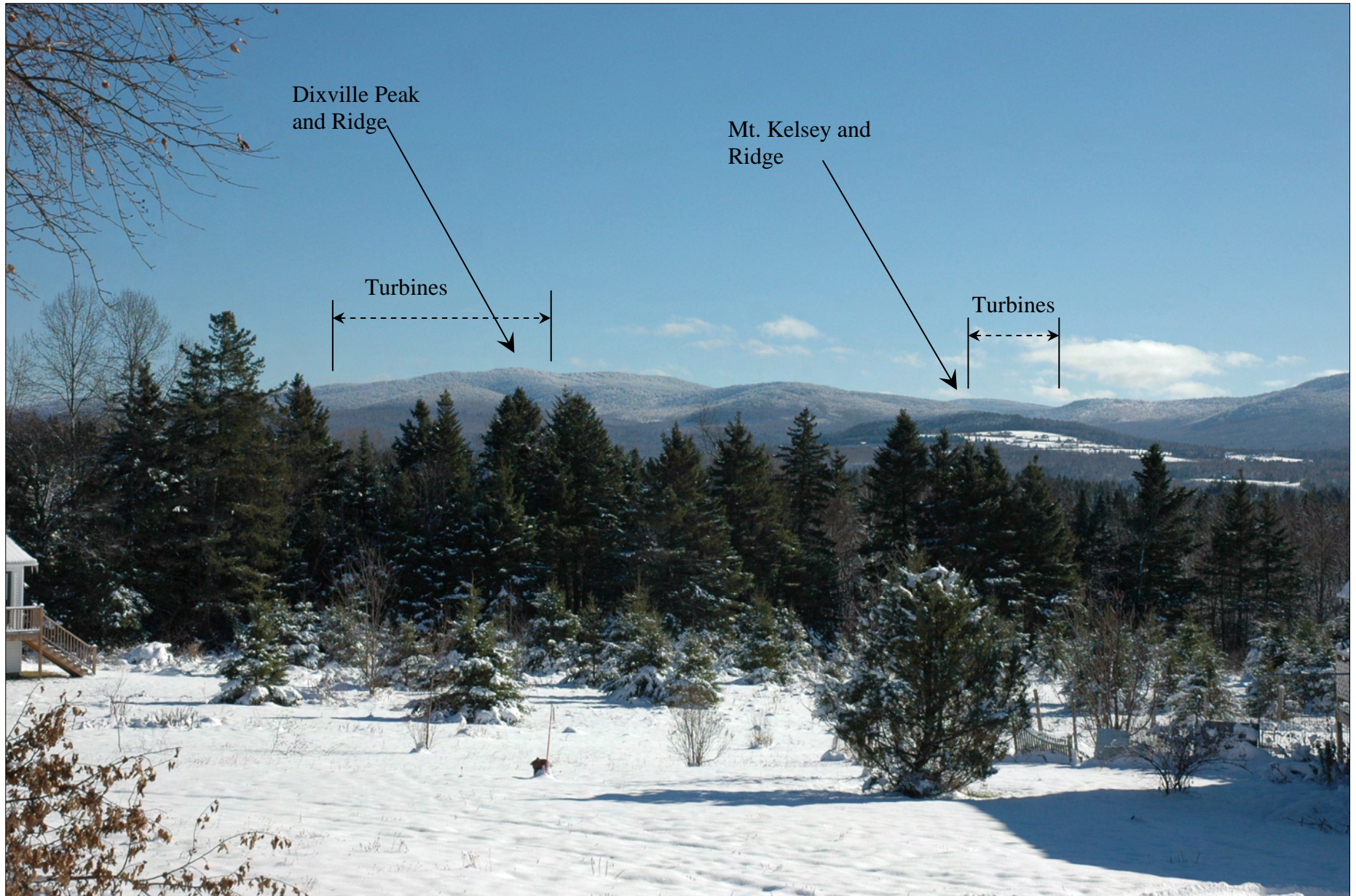
VP 3 – Route 26 @ Fish Hatchery Road (8.3 miles (13.4 km) from nearest turbine)



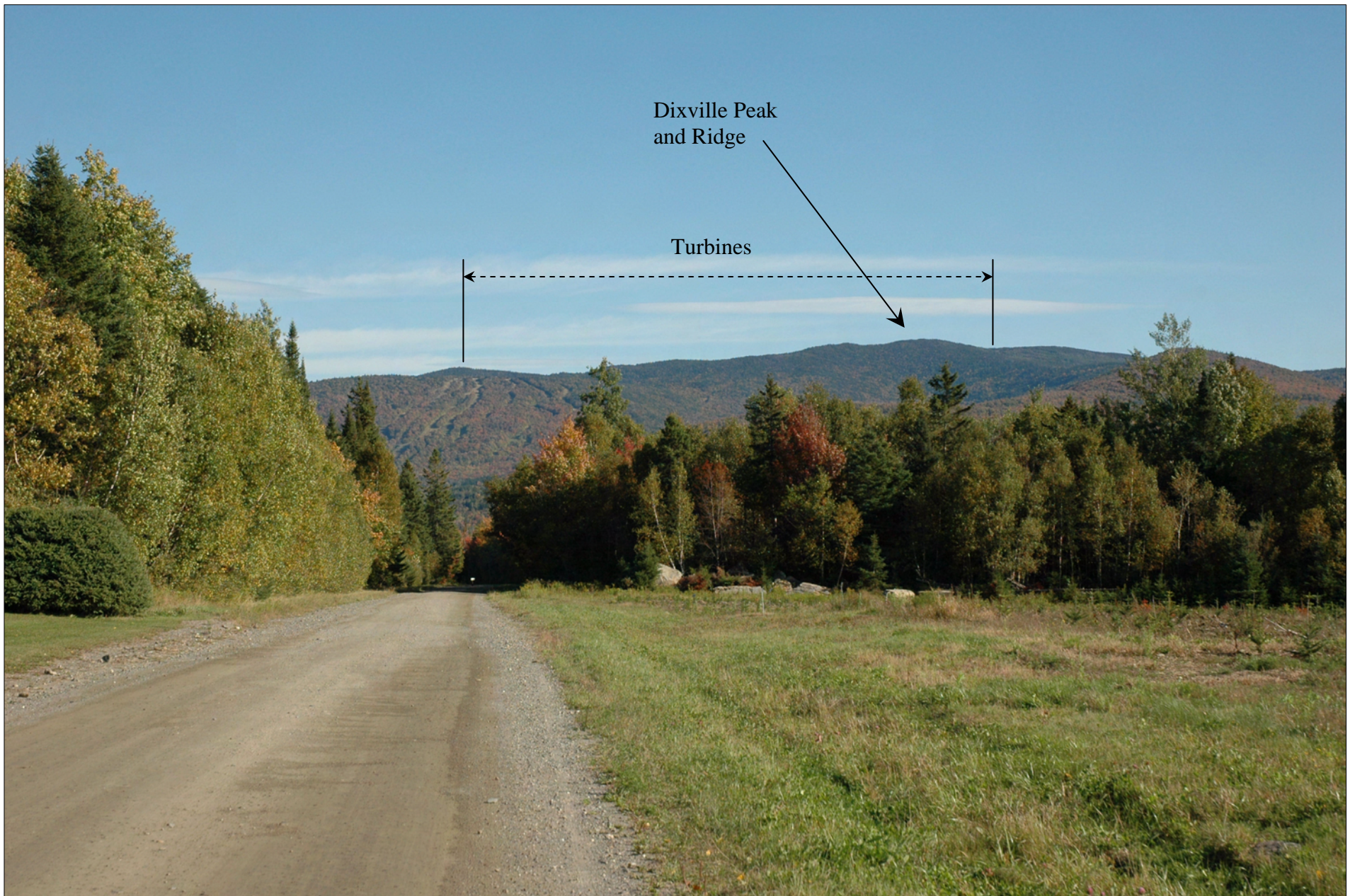
VP 4 – Reed Road (6.5 miles (10.5 km) from nearest turbine)



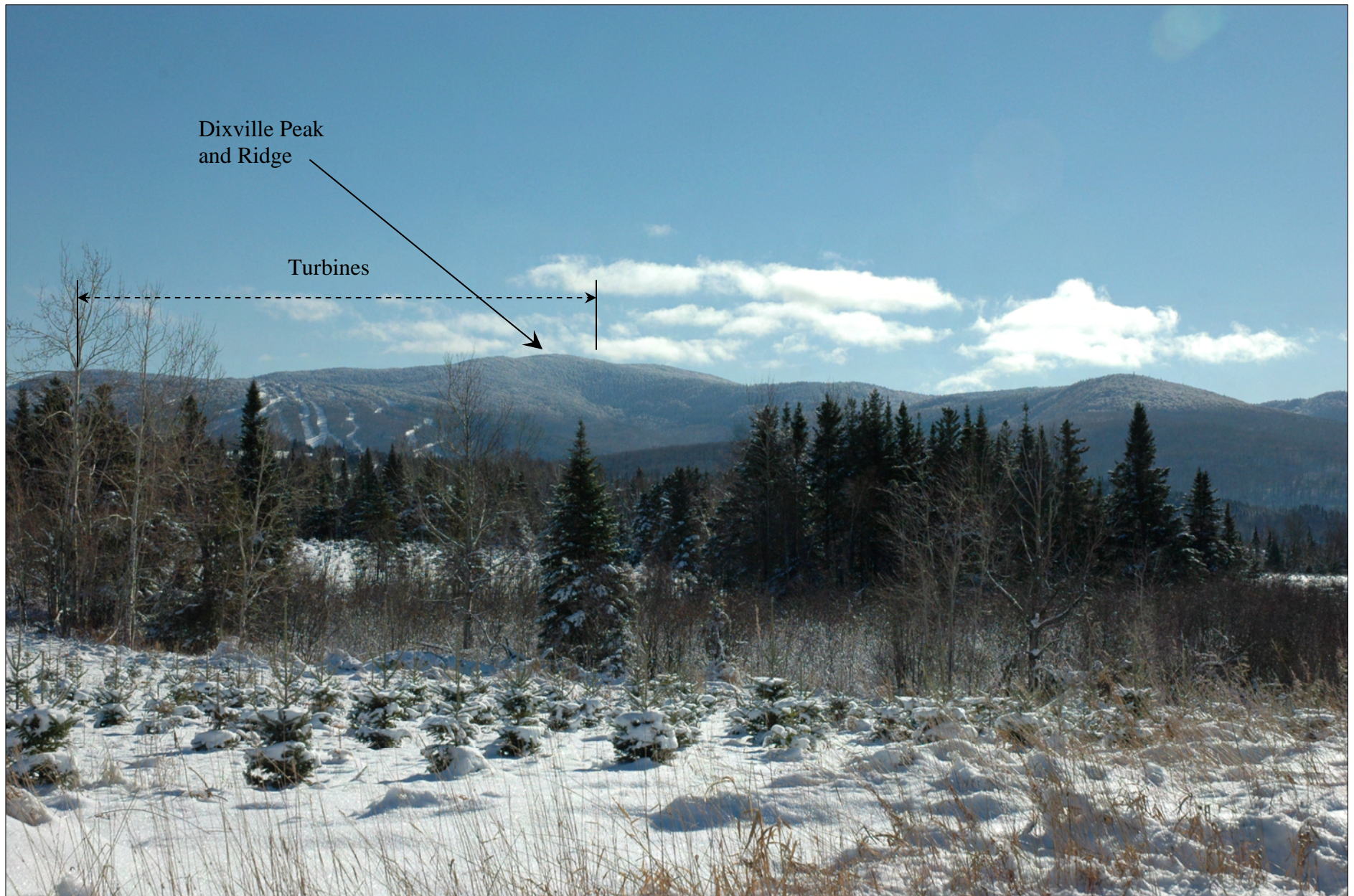
VP 5 – L'Forbes Road (6.7 miles (10.8 km) from nearest turbine)



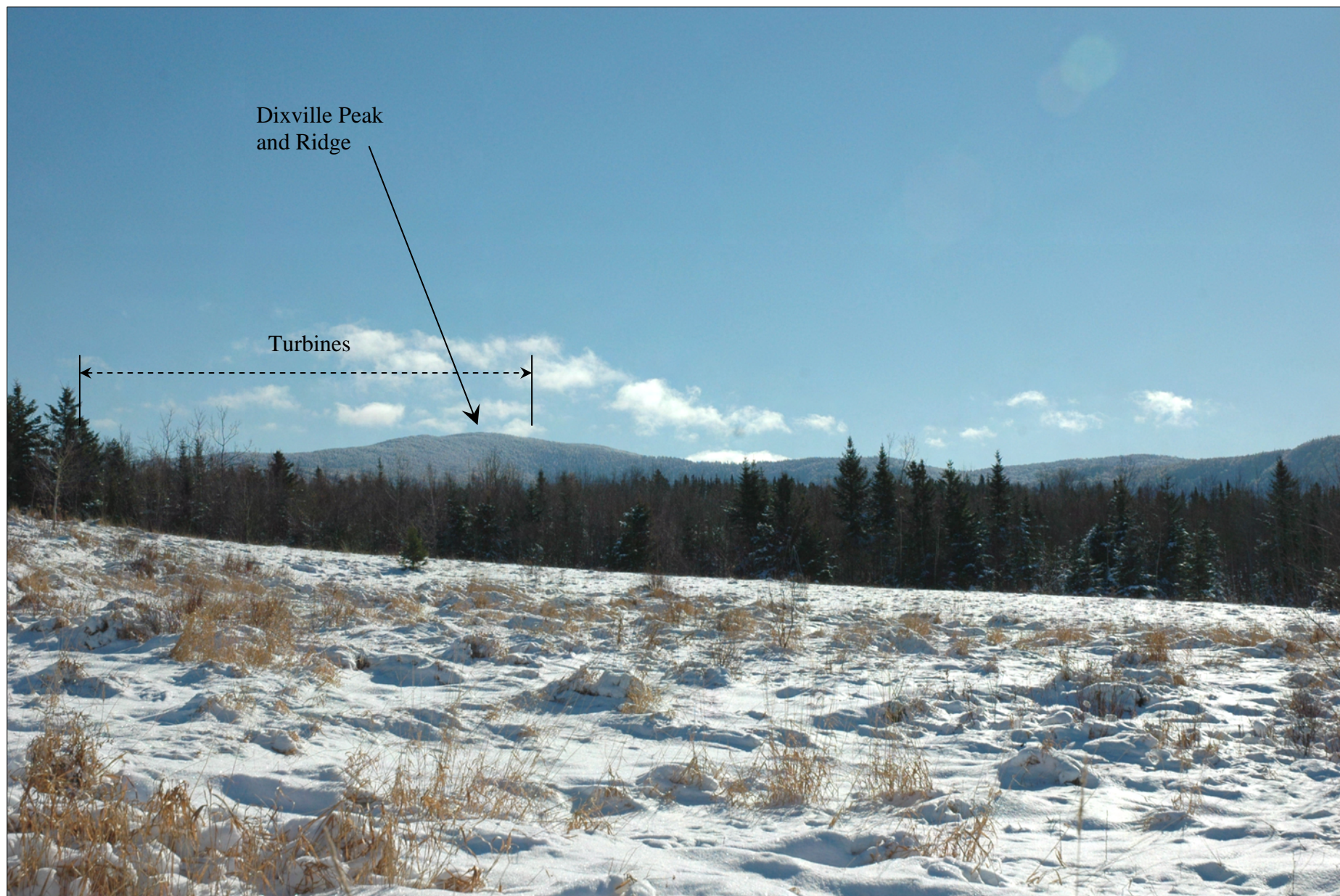
VP 6 – East Colebrook Road, West End (6.5 miles (10.5 km) from nearest turbine)



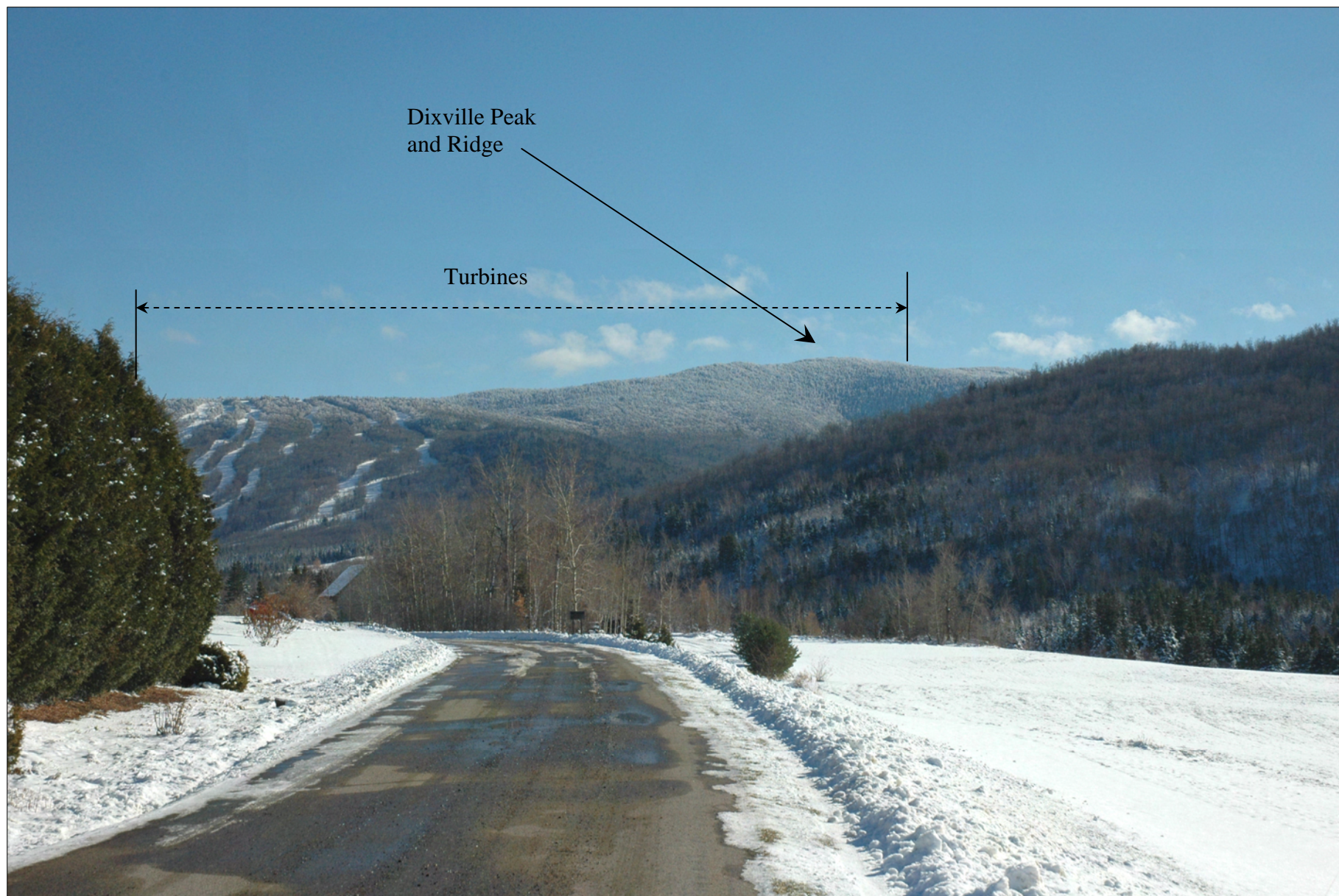
VP 7– East Colebrook Road, East End (4.6 miles (7.4 km) from nearest turbine)



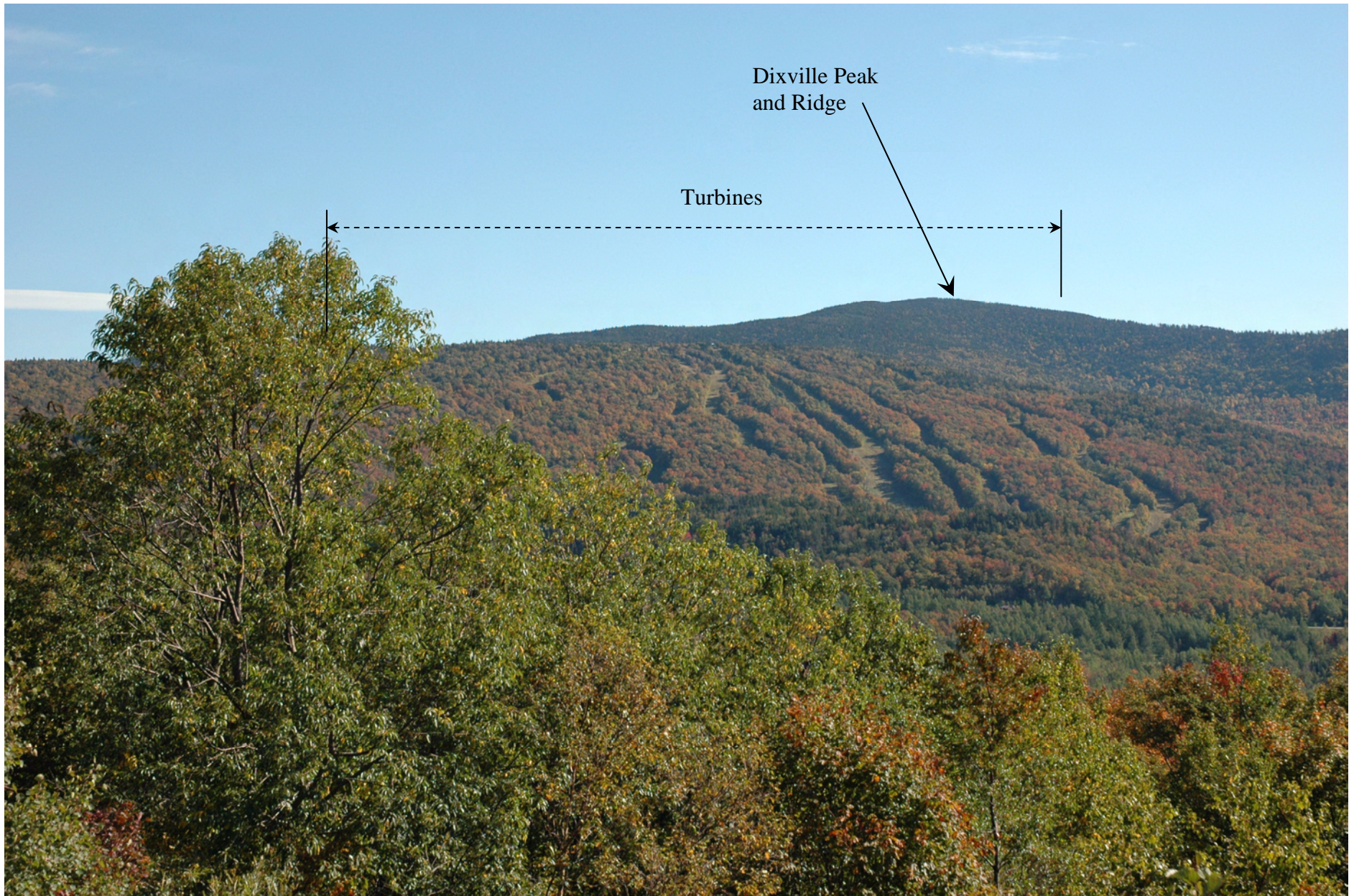
VP 8– Diamond Pond Road (4.3 miles (6.9 km) from nearest turbine)



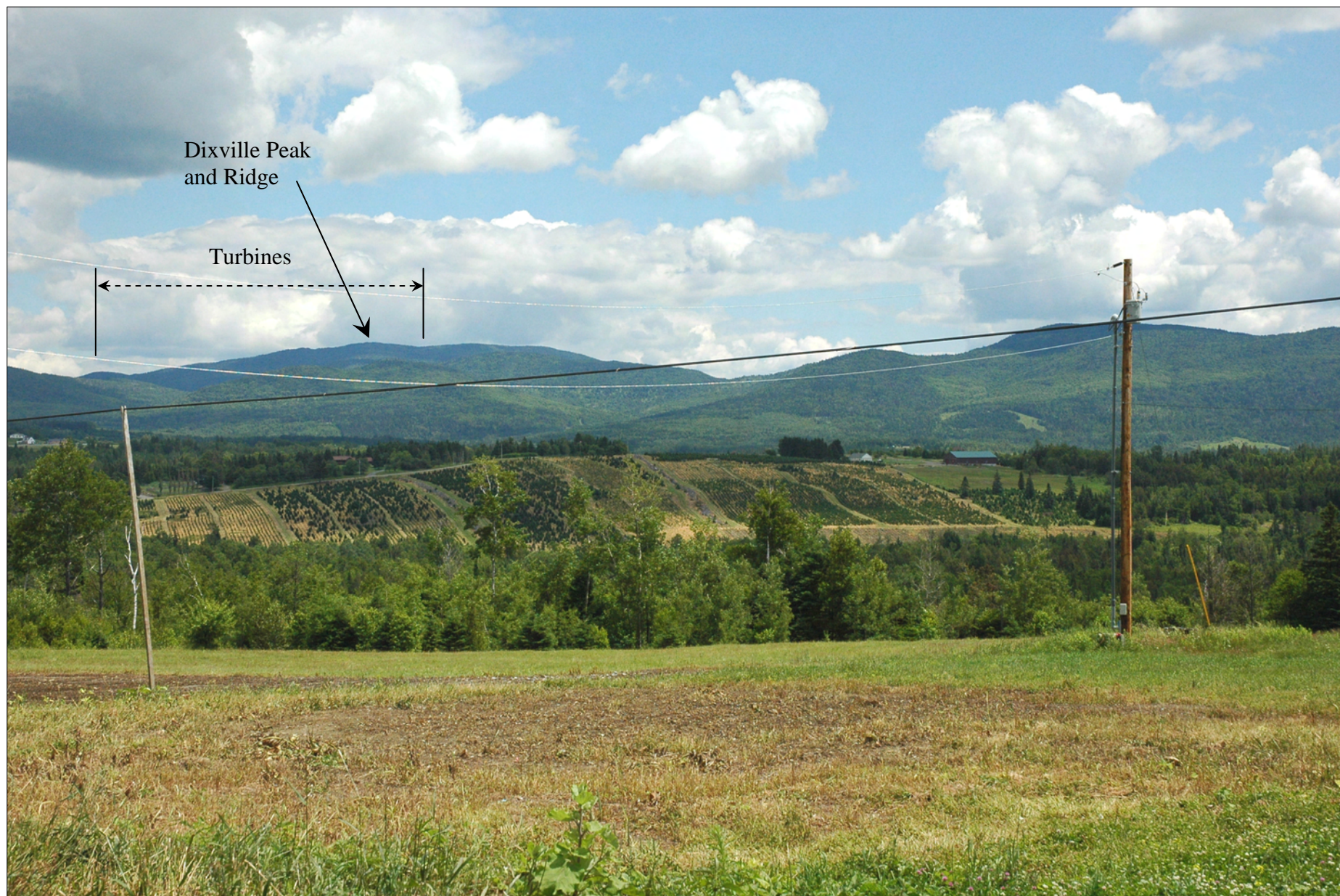
VP 9 – Golf Links Road (3.6 miles (5.8 km) from nearest turbine)



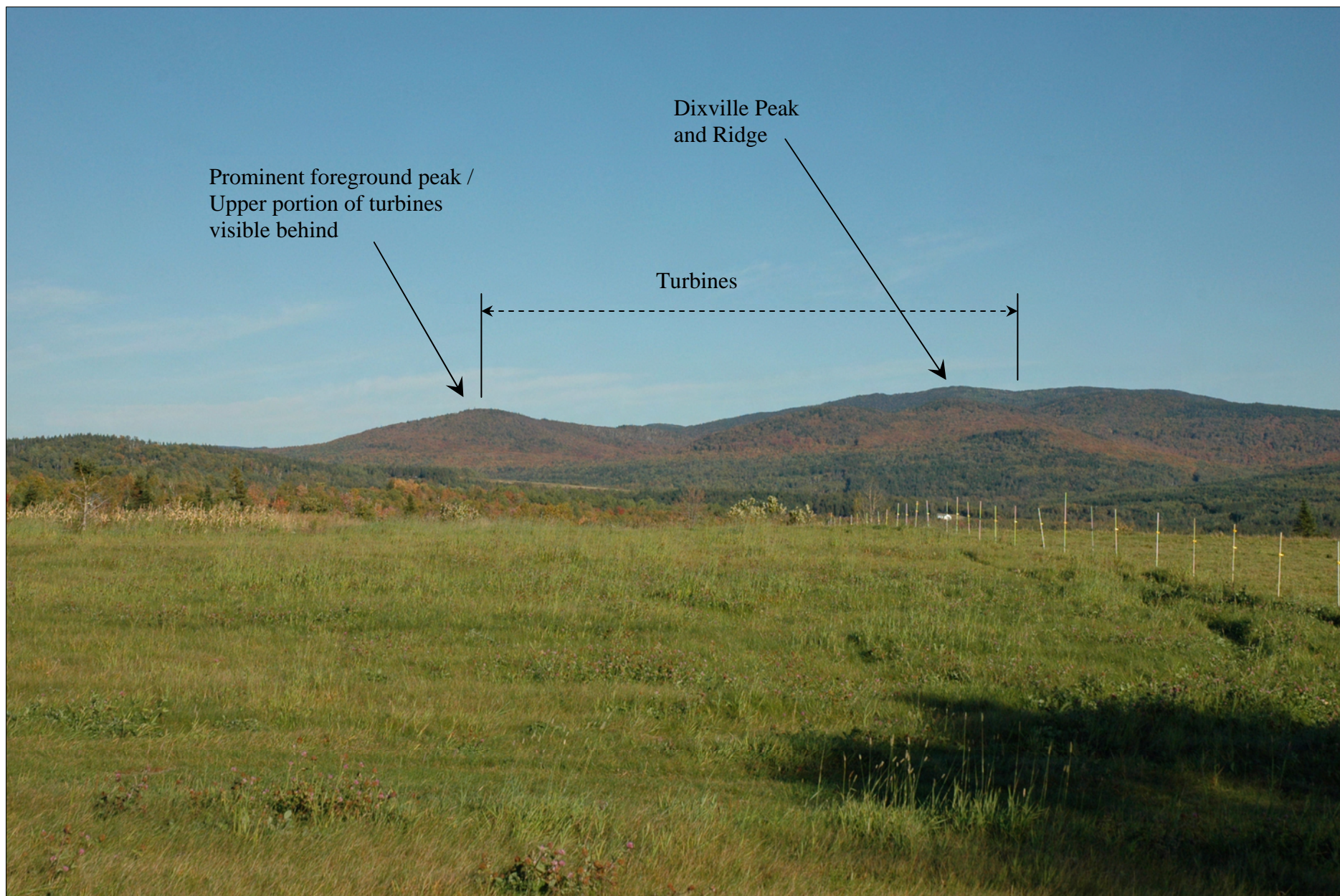
VP 10 – Munn Road (3.2 miles (5.1 km) from nearest turbine)



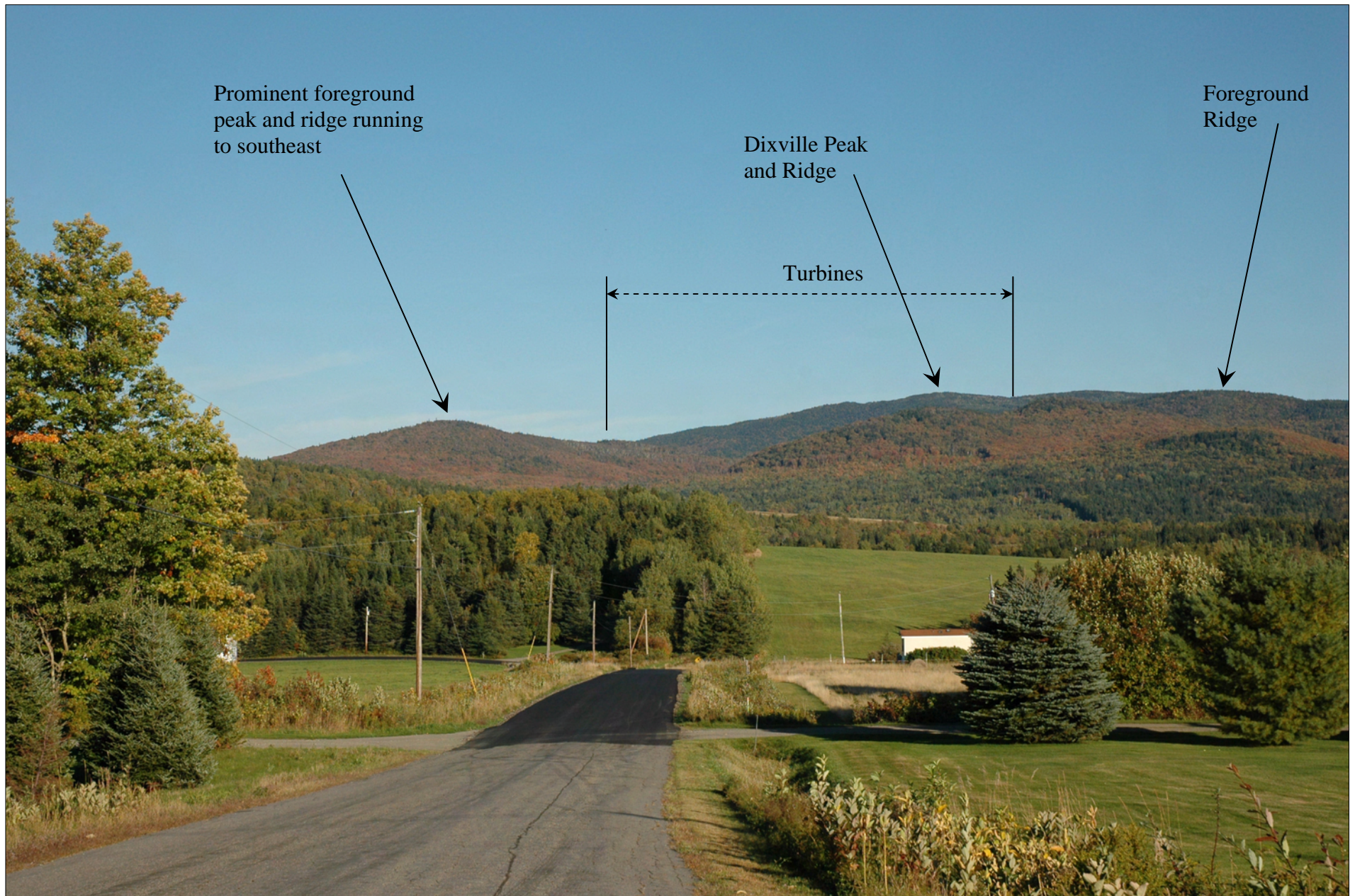
VP 11– Panorama Golf Course (2.6 miles (4.2 km) from nearest turbine)



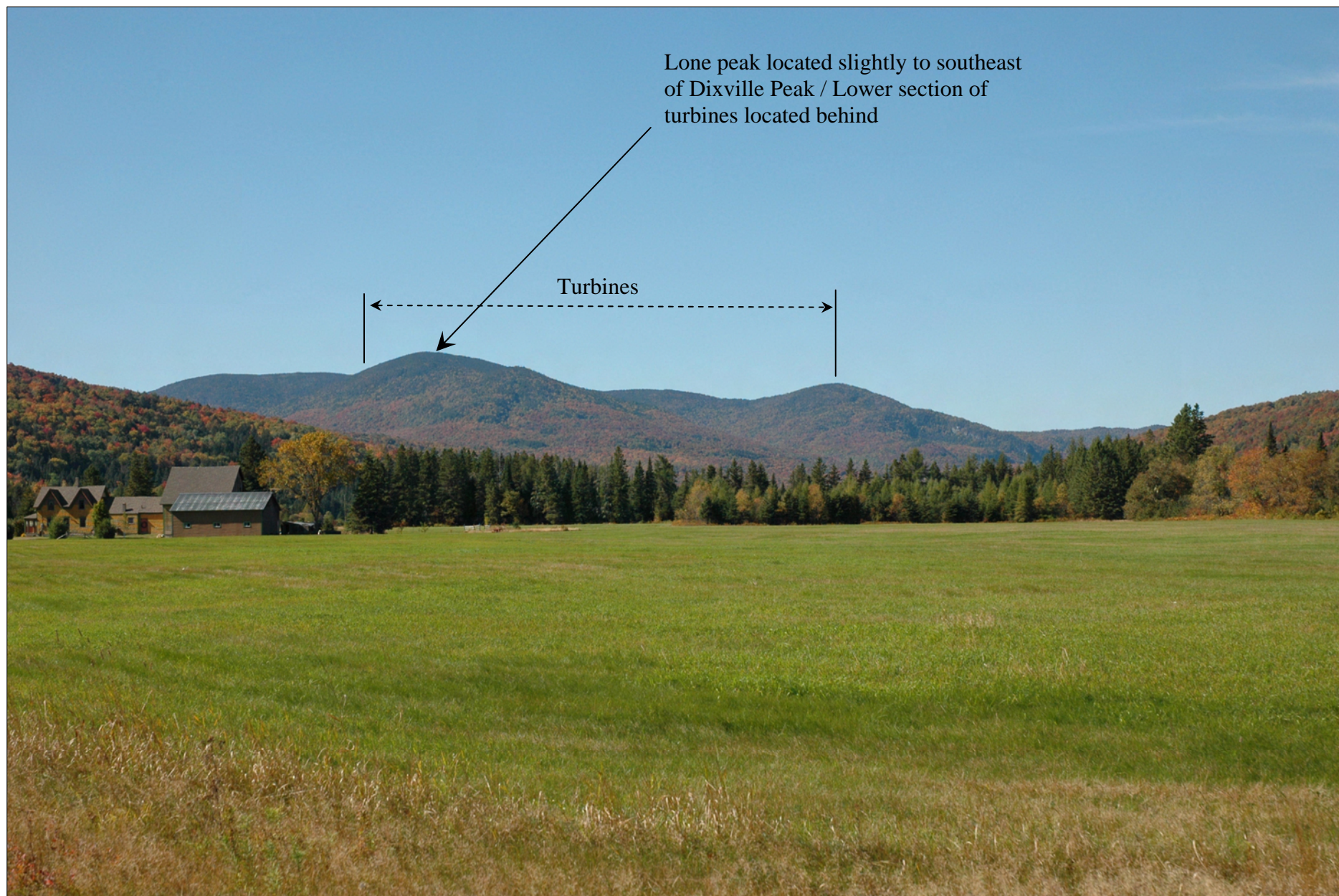
VP 13 – Fish Pond Road (6.3 miles (10.1 km) from nearest turbine)



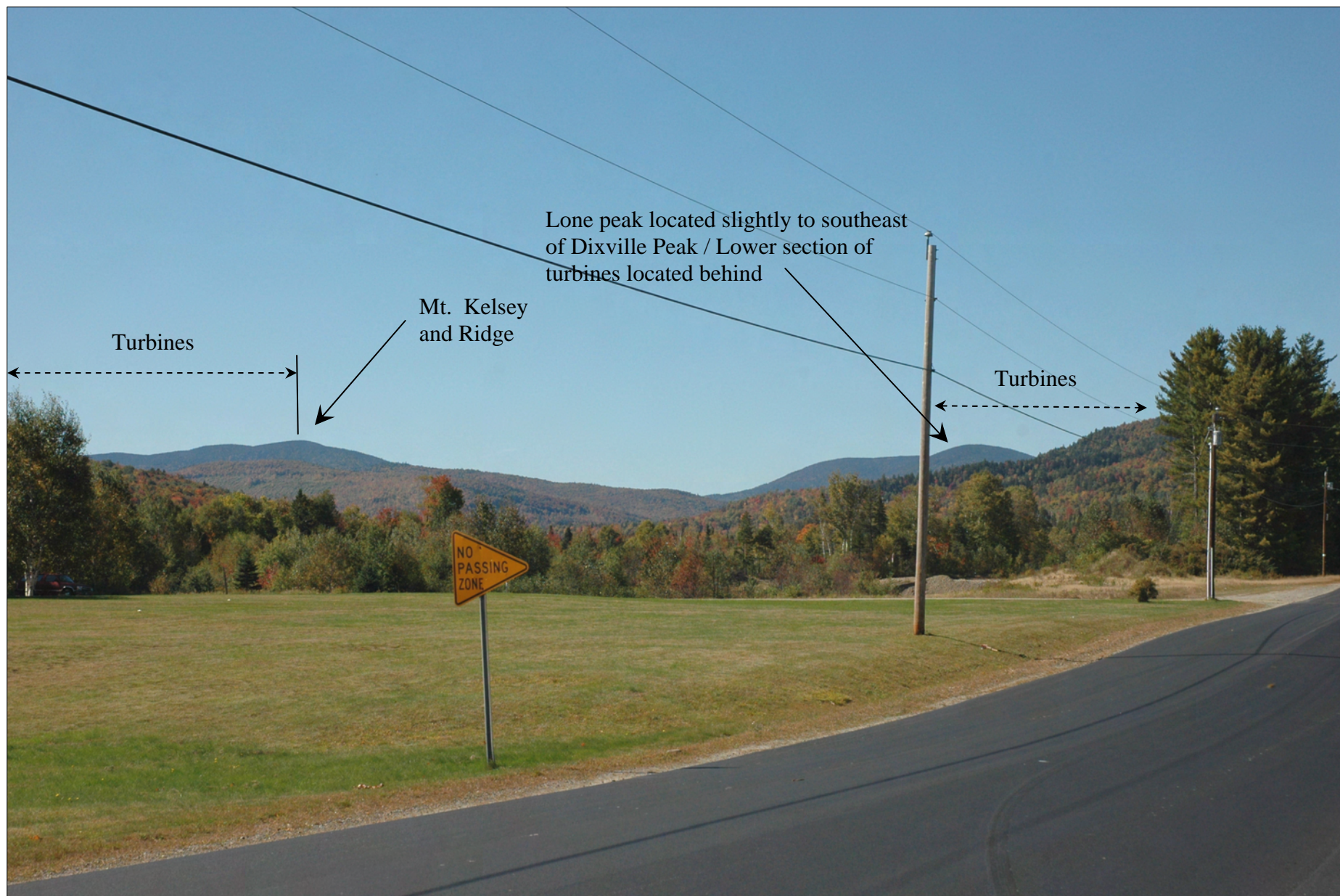
VP 14 – Marshall Hill Road (5.4 miles (8.7 km) from nearest turbine)



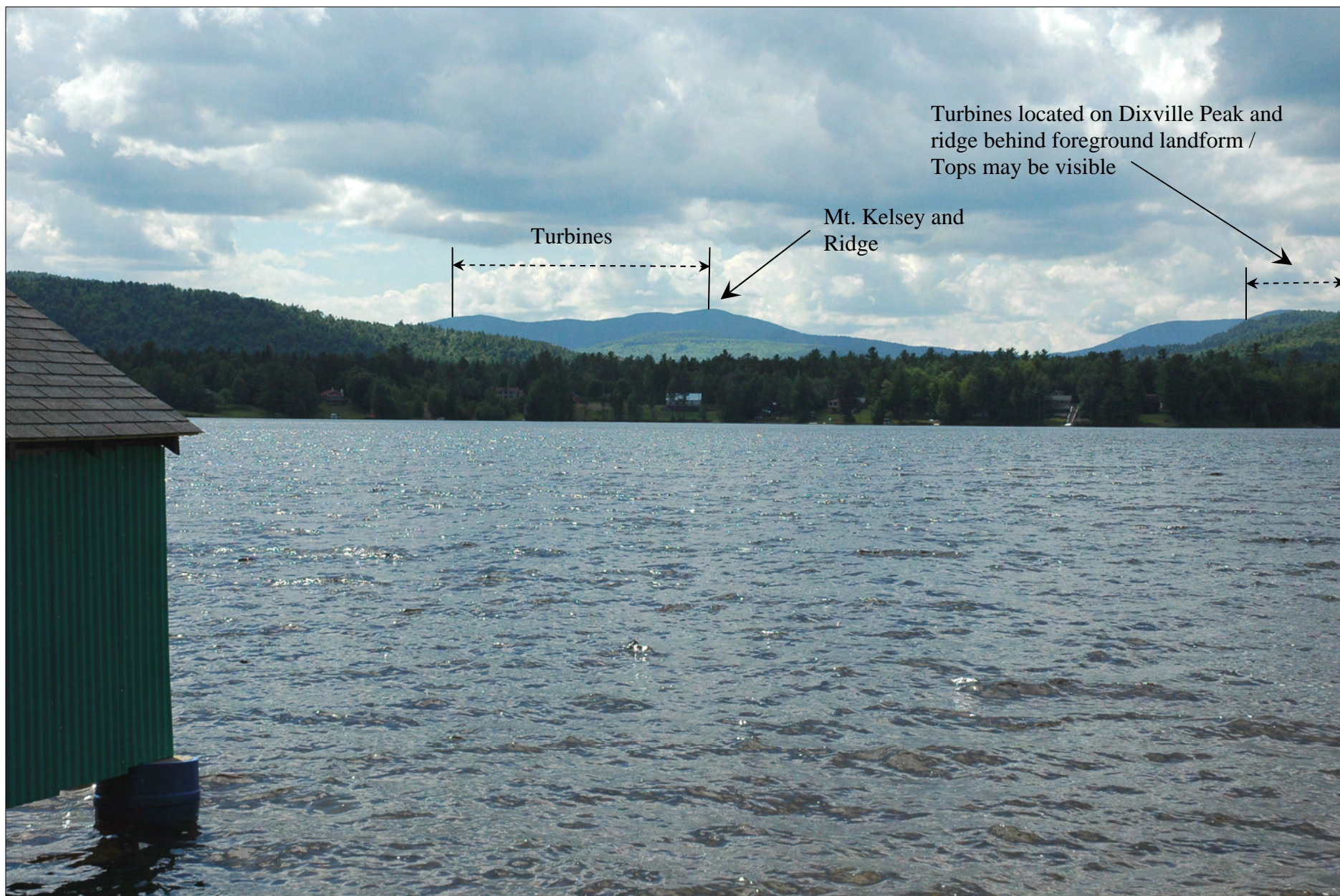
VP 15 – Keach Road, Cilley Hill (4.7 miles (7.6 km) from nearest turbine)



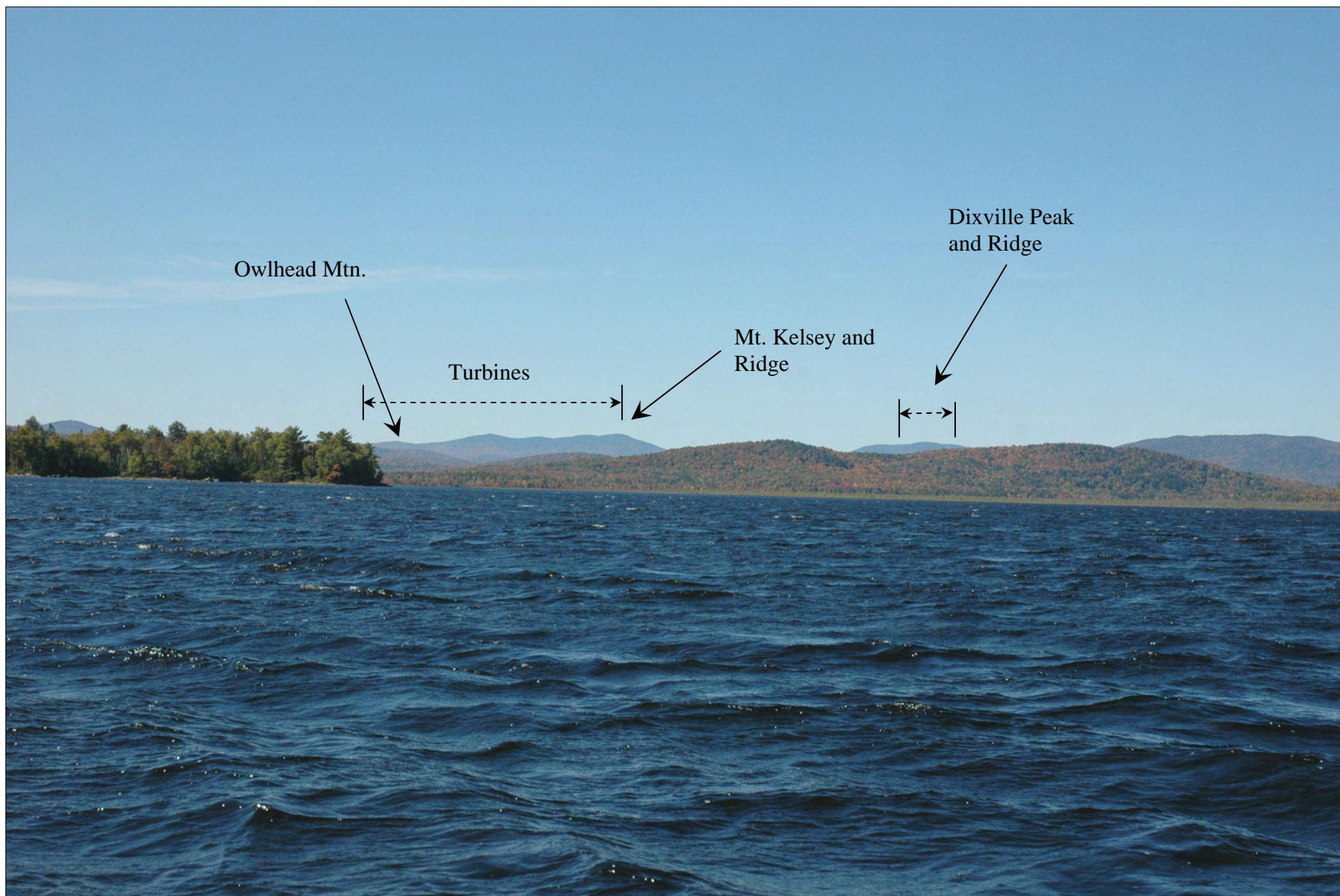
VP 16 – Route 26 @ Signal Mtn. Road (4.8 miles (7.7 km) from nearest turbine)



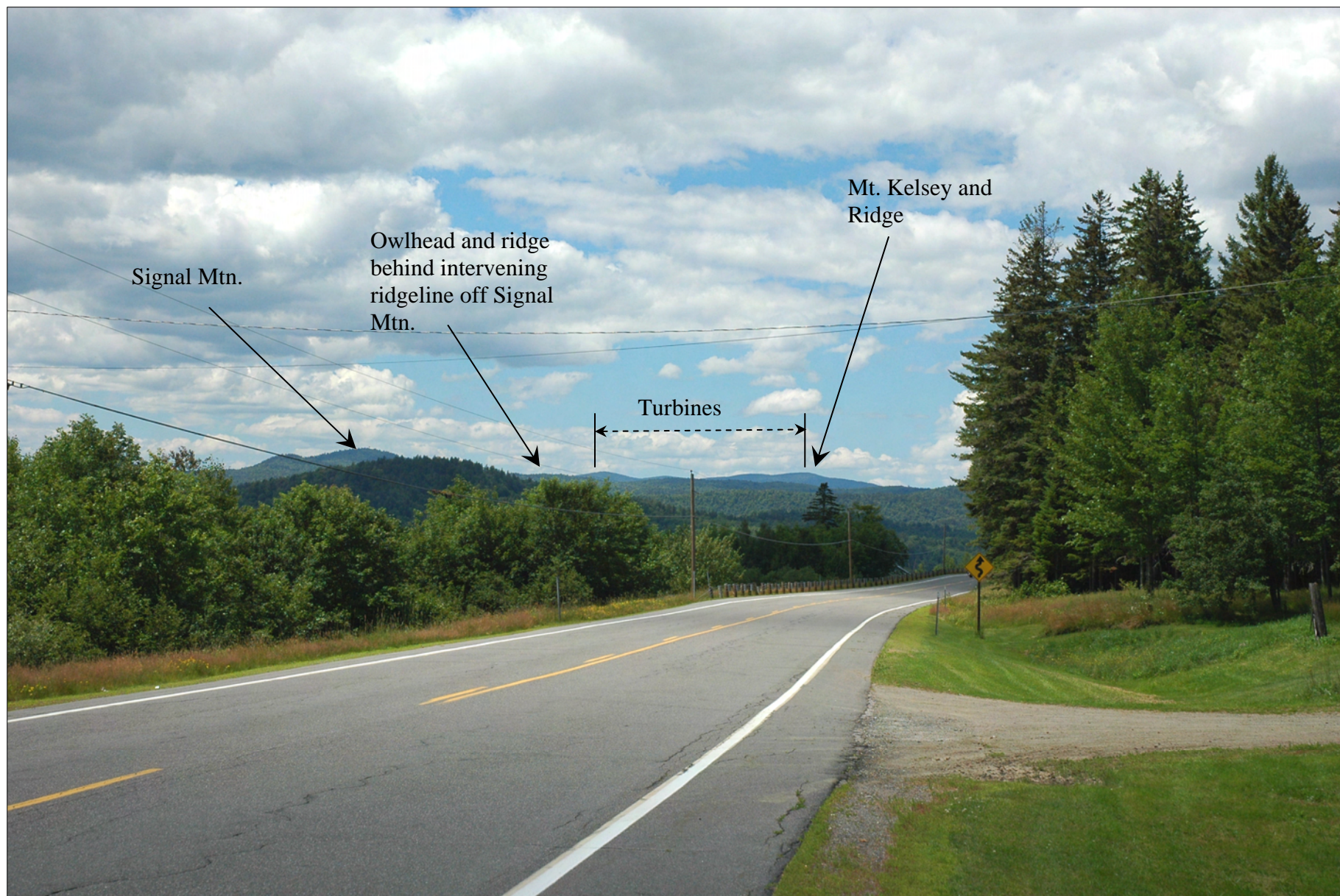
VP 17 – Route 26 West of Errol (6.9 miles (11.1 km) from nearest turbine)



VP 18 – Akers Pond (7.9 miles (12.7 km) from nearest turbine)



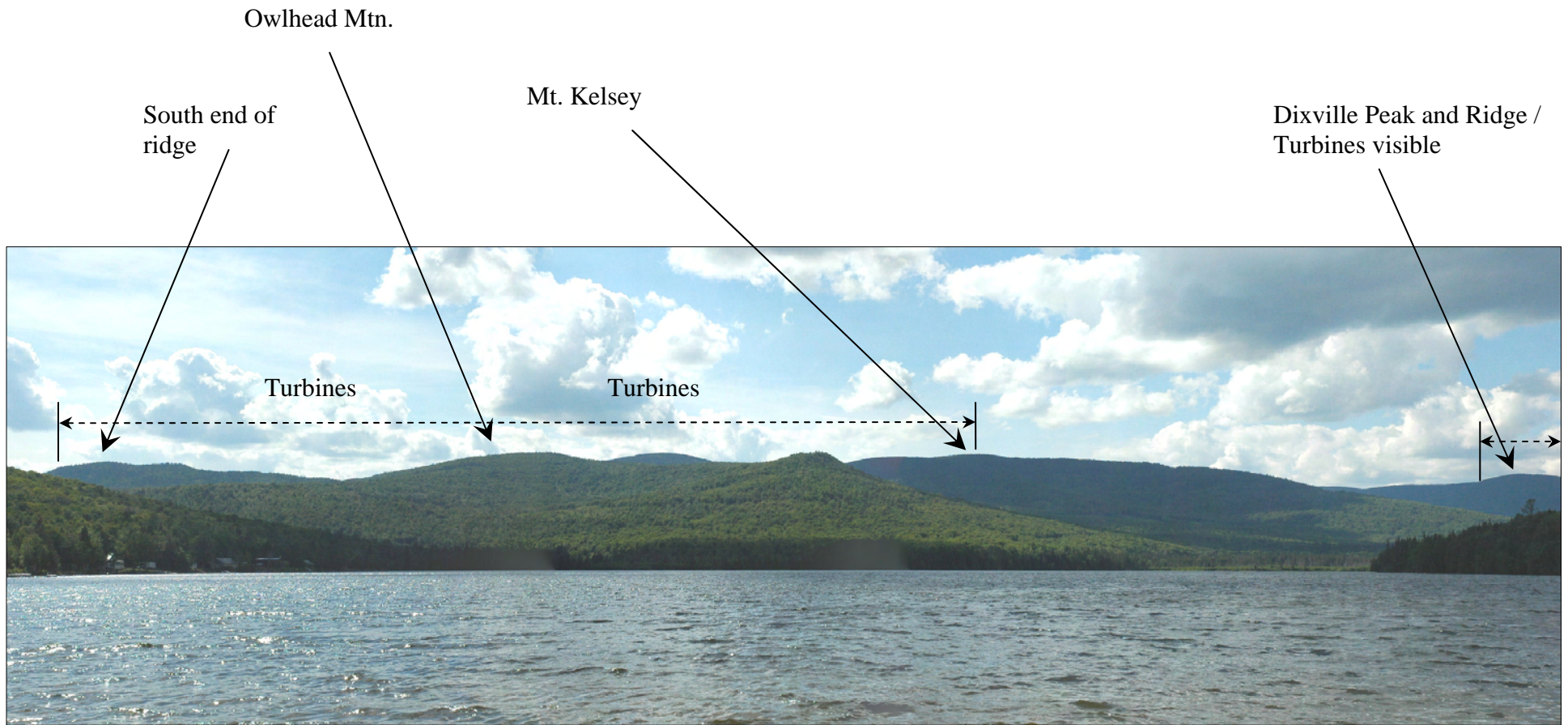
VP 19 – Umbagog Lake (13.3 miles (21.4 km) from nearest turbine)



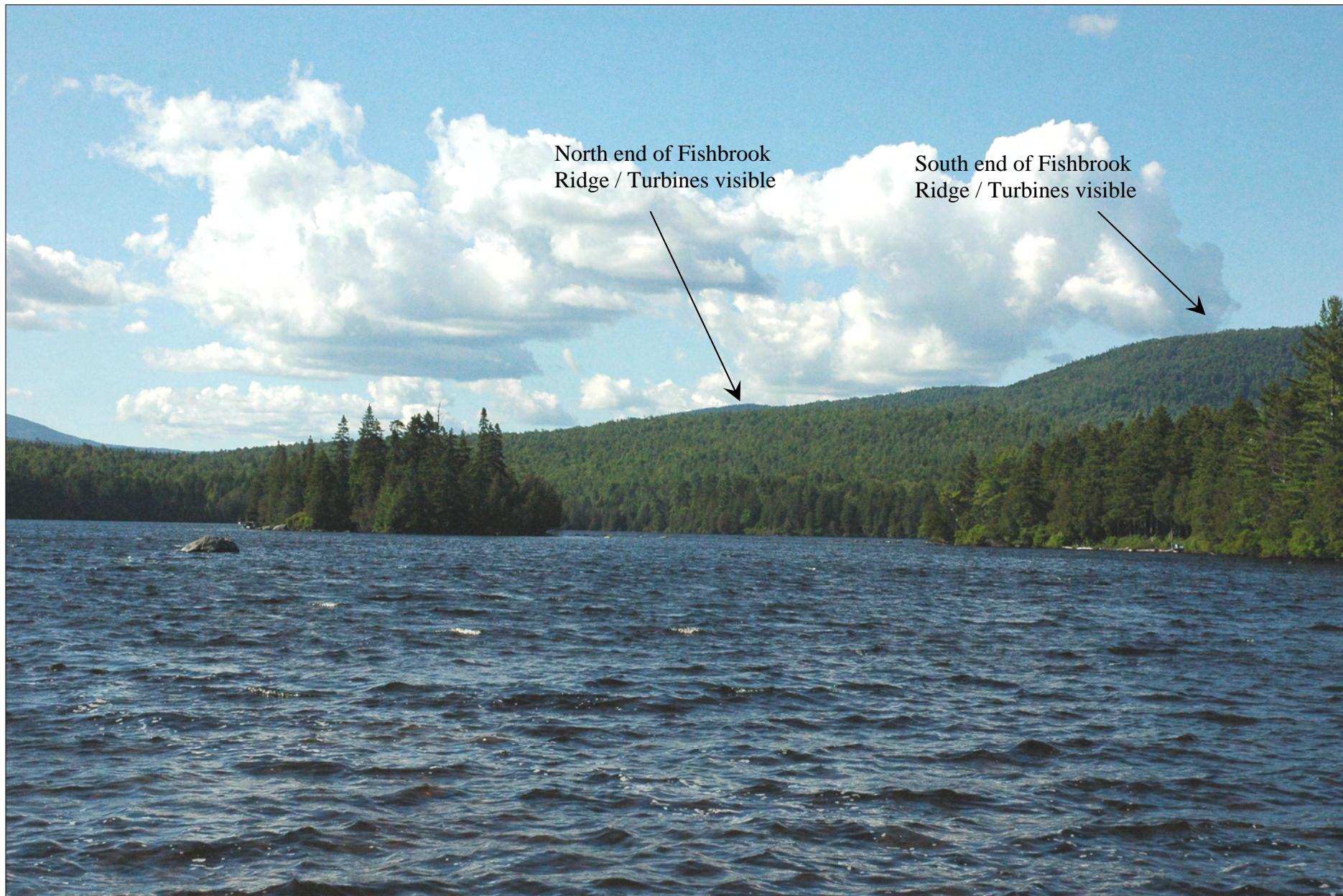
VP 20 – Route 26 South of Errol (10.1 miles (16.3 km) from nearest turbine)



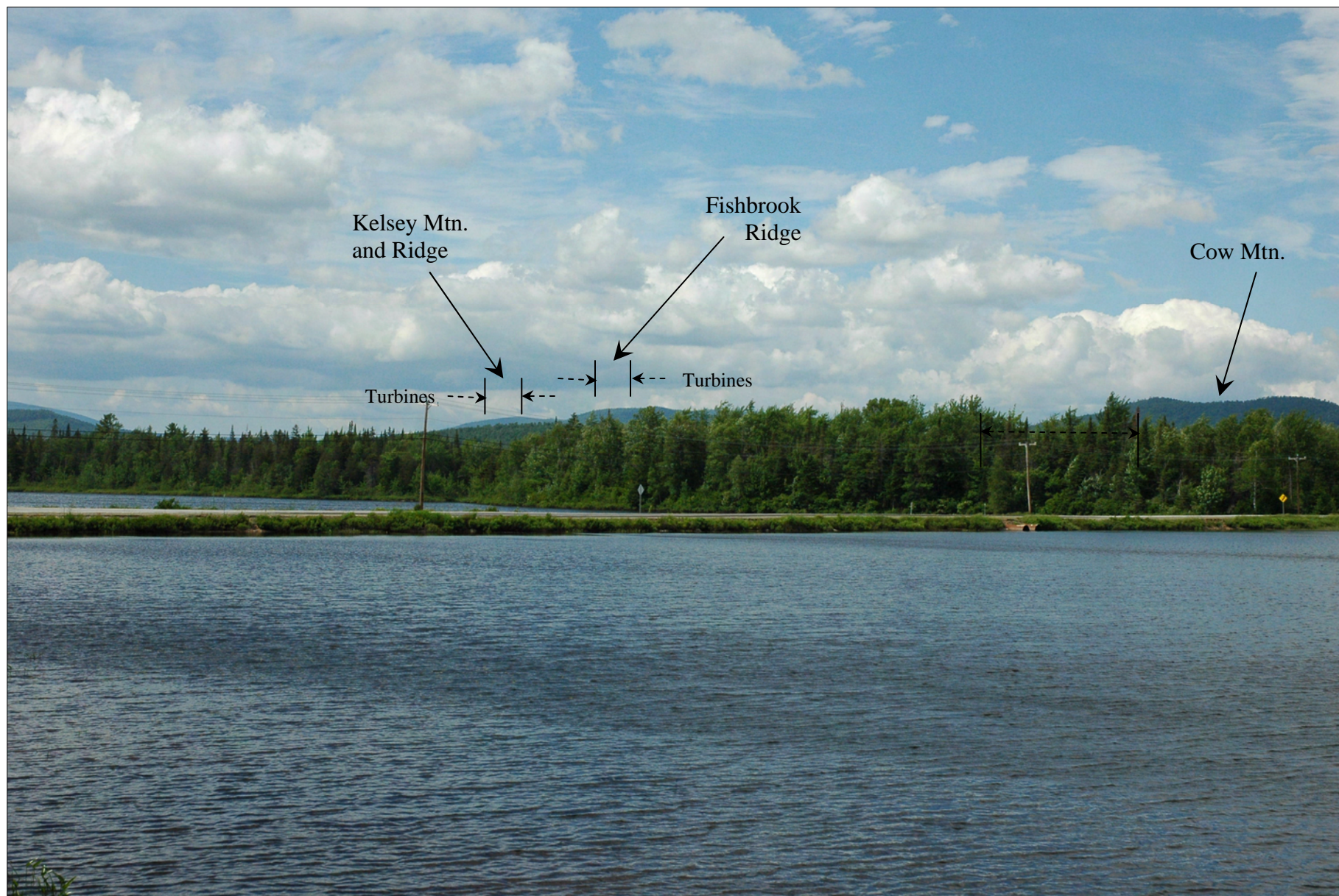
VP 21 – Route 26 South of Errol (11.1 miles (17.9 km) from nearest turbine)



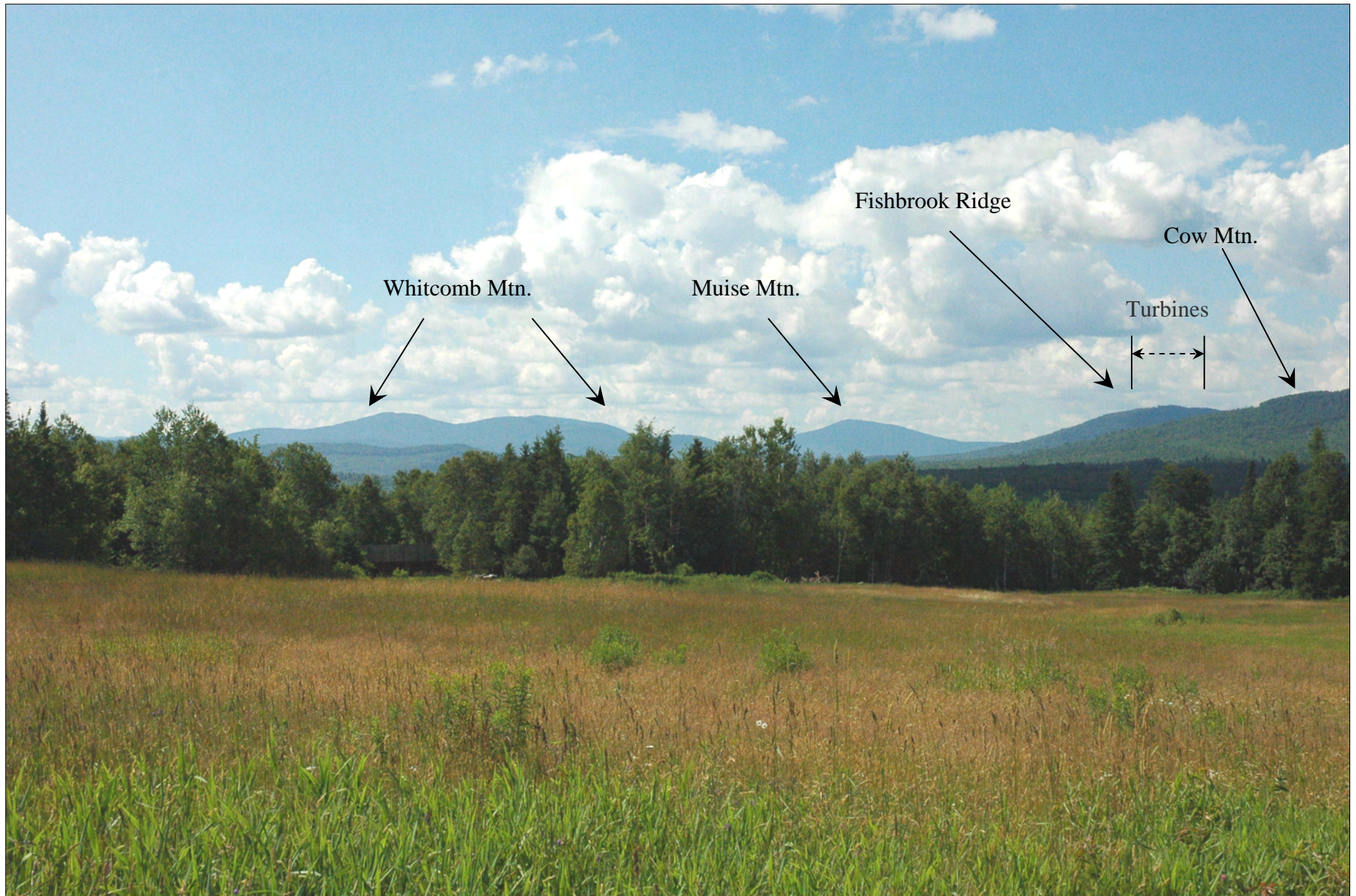
VP 22 – Millsfield Pond, SE End (2.6 miles (4.2 km) from nearest turbine)



VP 23– Dummer Pond (2.3 miles (3.7 km) from nearest turbine)



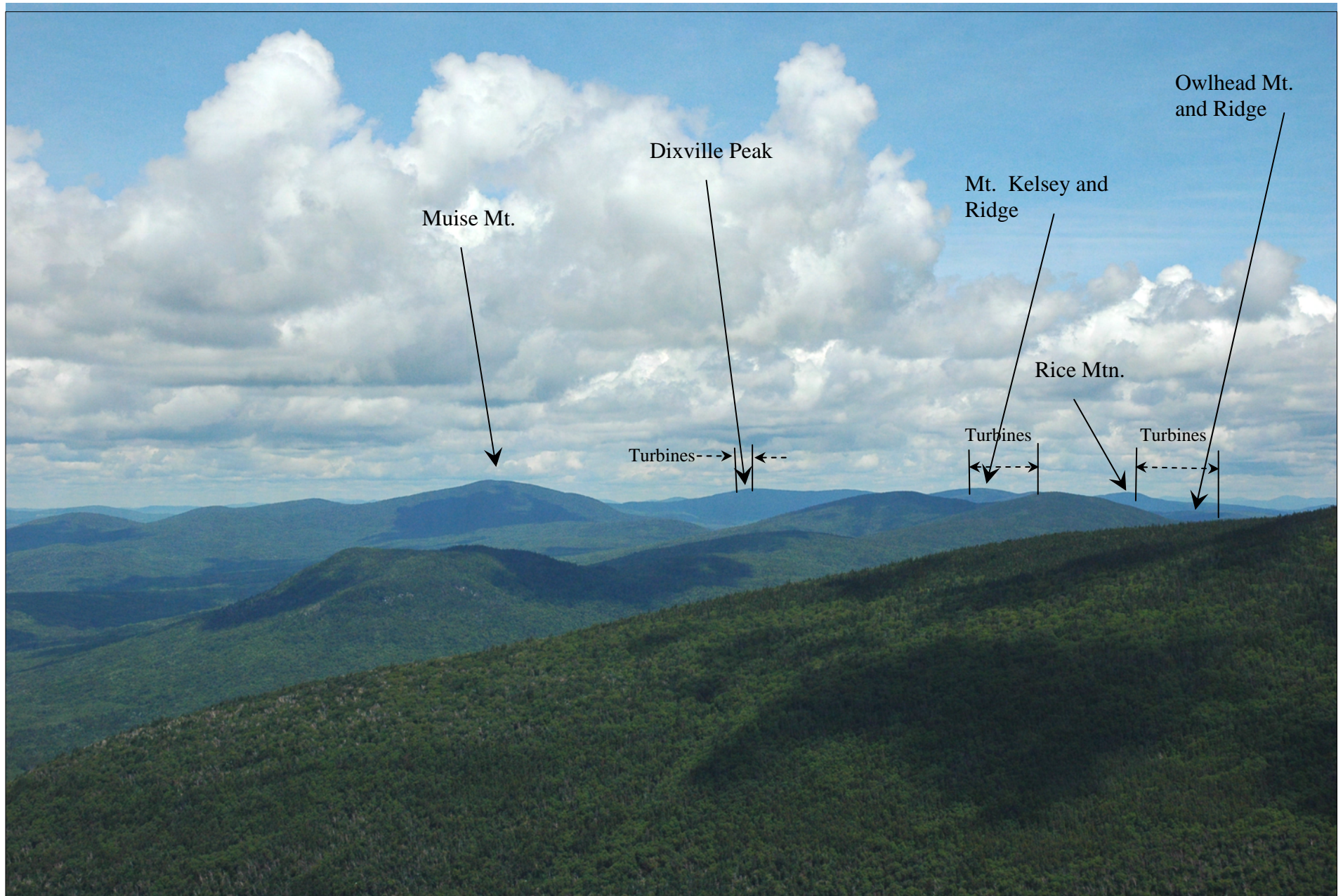
VP 24 – Pontook Reservoir, Boat Landing (6.3 miles (10.1 km) from nearest turbine)



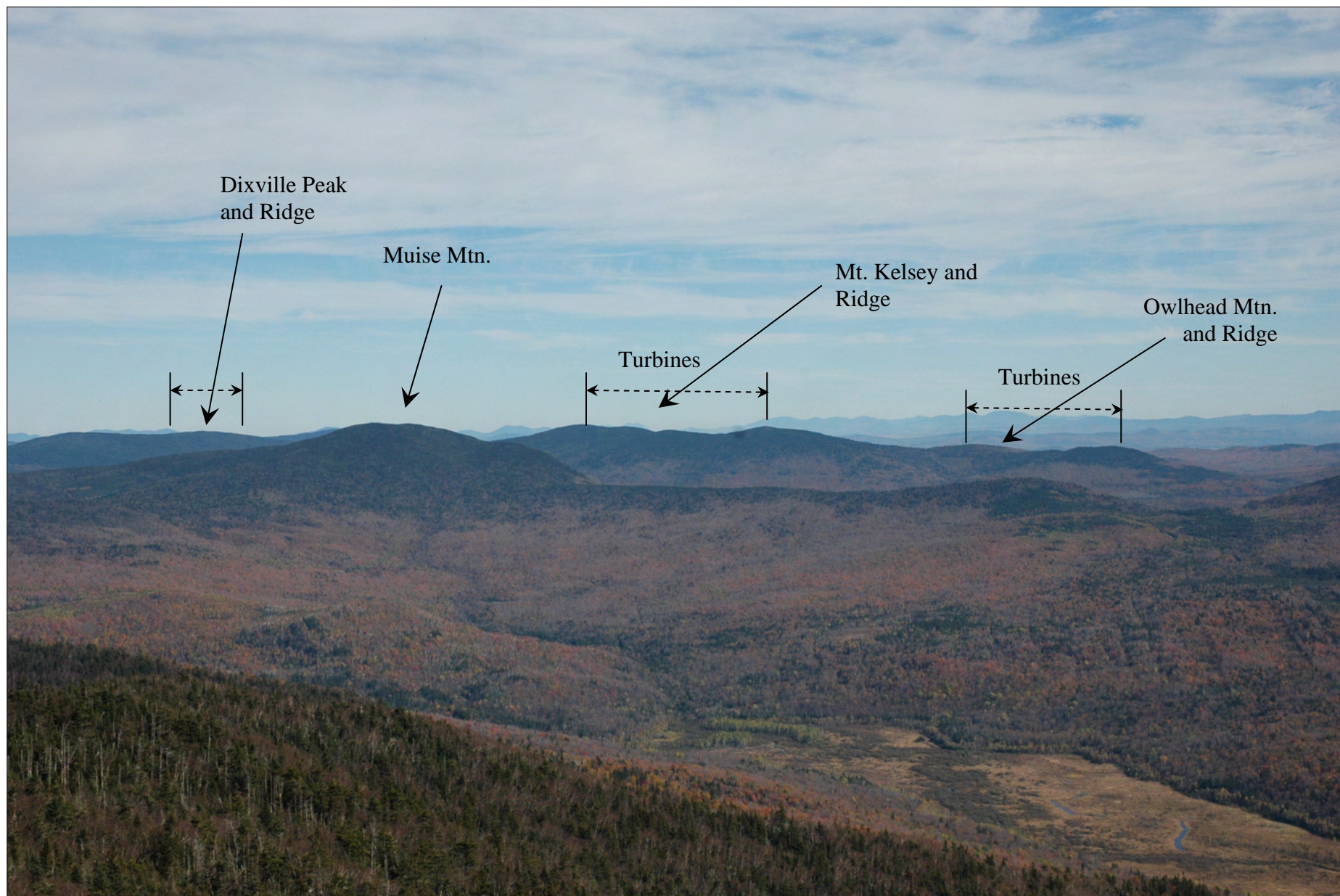
VP 25 – Veezey Hill, Hill Road (6.6 miles (10.6 km) from nearest turbine)



VP 26 – Route 110B (11.1 miles (17.9 km) from nearest turbine)



VP 28 – North Percy Peak (9.4 miles (15.1 km) from nearest turbine)



VP 29 – Sugarloaf Mountain (7.8 miles (12.6 km) from nearest turbine)

APPENDIX F

PHOTO SIMULATIONS

PHOTOSIMULATION METHODOLOGY

Photosimulations (sometimes called “visualizations”) were created in order to document the visual impact of wind turbine siting in the landscape. Using WindPRO software, wind turbines are rendered onto landscape photographs taken at particular viewpoints around the vicinity of the project. Viewpoints are documented with Global Positioning System (GPS) points in the field and with digital photographs taken at a 50mm equivalent focal length. In this case, photographs were taken using a Nikon D80 or D200 digital camera. Time of day and angle of view were recorded. Control points such as distinctive geographic formations in the digital elevation model or structures and objects in the photograph with known coordinates are used to verify the position and angle of view from the camera. Descriptive information about the photograph is entered into the model such as the focal length, geographic coordinates of the photo location, and the time and date that the photo was taken. Meteorological conditions including extent of cloud cover, wind direction, and weather conditions are also input. The WindPRO model then references information about the specific turbines from an internal catalogue including hub height, rotor diameter, color, and the dimensions of the blades, tower, and nacelle and renders the turbines onto the photograph taking into account lighting conditions, the position of the sun, and the orientation of the rotor blade.



Viewpoint 16 - Signal Mt Road

Project Location
99 MW windpark in Dixville and Millsfield, Coos County, New Hampshire

Turbine Information	
Turbine Model	Vestas V90 3MW
Hub Height	262 ft (80 m)
Rotor Diameter	295 ft (90 m)


Camera Information	
Date and Time:	1:59 PM September 24, 2007
Latitude (N)	44°47.972'
Longitude (W)	71°12.941'
Elevation above sea level	1305 ft (398 m)
Focal Length in 35mm	52mm
Distance to turbines	5.3 miles (8.5 km)

Technical Information	
Software	WindPRO 2.5
Digital elevation data	SRTM (1 arc sec)
DEM source	http://seamless.usgs.gov


Original Photograph

Viewpoint Location Map

Prepared For



Prepared By





Viewpoint 3 – Fish Hatchery Rd

Project Location
99 MW windpark in Dixville and Millsfield, Coos County, New Hampshire

Turbine Information	
Turbine Model	Vestas V90 3MW
Hub Height	262 ft (80 m)
Rotor Diameter	295 ft (90 m)

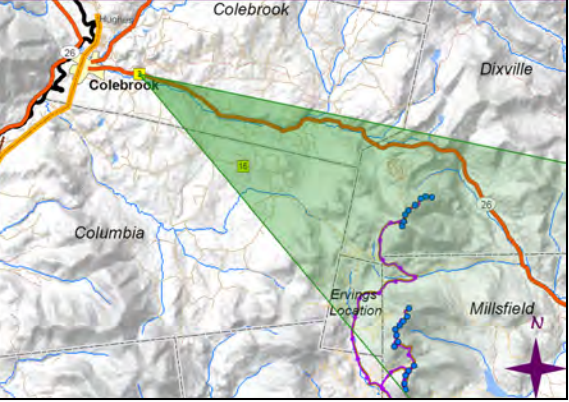
Camera Information	
Date and Time:	10:31 PM July 03, 2007
Latitude (N)	44°53.484'
Longitude (W)	71°28.134'
Elevation above sea level	1135 ft (346 m)
Focal Length in 35mm	52mm
Distance to turbines	8.2 miles (13.2 km)

Technical Information	
Software	WindPRO 2.5
Digital elevation data	SRTM (1 arc sec)
DEM source	http://seamless.usgs.gov

Original Photograph



Viewpoint Location Map





Viewpoint 22 a - Millsfield Pond

Project Location
99 MW windpark in Dixville and Millsfield, Coos County, New Hampshire

Turbine Information	
Turbine Model	Vestas V90 3MW
Hub Height	262 ft (80 m)
Rotor Diameter	295 ft (90 m)

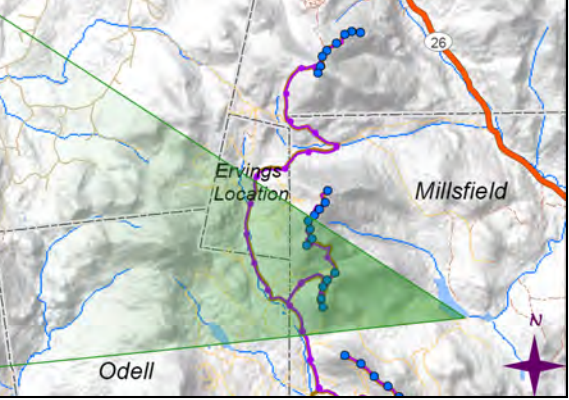
Camera Information	
Date and Time:	4:07 PM July 03, 2007
Latitude (N)	44°46.0522'
Longitude (W)	71°15.529'
Elevation above sea level	1738 ft (530 m)
Focal Length in 35mm	52mm
Distance to turbines	2.6 miles (4.2 km)

Technical Information	
Software	WindPRO 2.5
Digital elevation data	SRTM (1 arc sec)
DEM source	http://seamless.usgs.gov

Original Photograph



Viewpoint Location Map





Viewpoint 22 b - Millsfield Pond

Project Location
99 MW windpark in Dixville and Millsfield, Coos County, New Hampshire

Turbine Information	
Turbine Model	Vestas V90 3MW
Hub Height	262 ft (80 m)
Rotor Diameter	295 ft (90 m)


Camera Information	
Date and Time:	4:08 PM July 03, 2007
Latitude (N)	44°46.0522'
Longitude (W)	71°15.529'
Elevation above sea level	1738 ft (530 m)
Focal Length in 35mm	52mm
Distance to turbines	3.2 miles (5.2 km)

Technical Information	
Software	WindPRO 2.5
Digital elevation data	SRTM (1 arc sec)
DEM source	http://seamless.usgs.gov


Original Photograph

Viewpoint Location Map

Prepared For



Prepared By





Viewpoint 28 – North Percy Peak

Project Location
99 MW windpark in Dixville and Millsfield, Coos County, New Hampshire

Turbine Information	
Turbine Model	Vestas V90 3MW
Hub Height	262 ft (80 m)
Rotor Diameter	295 ft (90 m)

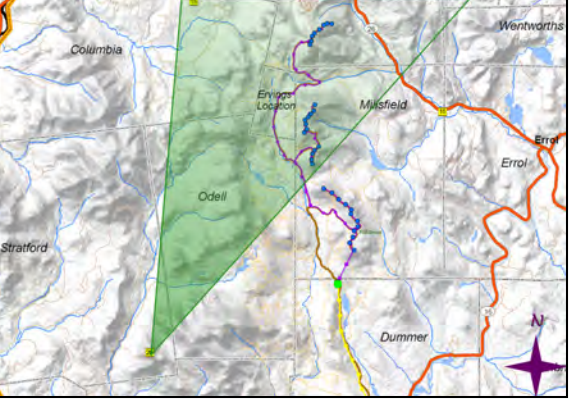
Camera Information	
Date and Time:	12:24 PM July 14, 2007
Latitude (N)	44°39.796'
Longitude (W)	71°26.094'
Elevation above sea level	3395 ft (1035 m)
Focal Length in 35mm	52mm
Distance to turbines	9.3 miles (15.0 km)

Technical Information	
Software	WindPRO 2.5
Digital elevation data	SRTM (1 arc sec)
DEM source	http://seamless.usgs.gov

Original Photograph



Viewpoint Location Map





Viewpoint 15 - Keach Road

Project Location
99 MW windpark in Dixville and Millsfield, Coos County, New Hampshire

Turbine Information	
Turbine Model	Vestas V90 3MW
Hub Height	262 ft (80 m)
Rotor Diameter	295 ft (90 m)

Camera Information	
Date and Time:	1:56 PM July 03, 2007
Latitude (N)	44°51.359'
Longitude (W)	71°24.545'
Elevation above sea level	1777 ft (542 m)
Focal Length in 35mm	52mm
Distance to turbines	4.6 miles (7.4 km)

Technical Information	
Software	WindPRO 2.5
Digital elevation data	SRTM (1 arc sec)
DEM source	http://seamless.usgs.gov

Original Photograph

Viewpoint Location Map

Prepared For

Prepared By

APPENDIX G

RESUMES

Jean E. Vissering Landscape Architecture

3700 NORTH STREET MONTPELIER VERMONT 05602 802-223-3262/jeanviss@attglobal.net

RESUME

EDUCATION

Master of Landscape Architecture - 1975, North Carolina State University, Raleigh, NC,
American Society of Landscape Architects Book Award.

Bachelor of Science in Landscape Architecture - 1972, University of Massachusetts, Amherst,
MA. Cum Laude. Honors Thesis on Pedestrian Environments.

PROFESSIONAL EXPERIENCE

Professional Consulting: Visual Resource Planning and Visual Impact Assessment Projects

- Visual Impact Assessment of the proposed Kibby Wind Energy Project in the Boundary Mountains of Maine on behalf of TransCanada.
- Visual Impact Assessment of the proposed Redington and Black Nubble Wind projects on behalf of the Appalachian Trail Conservancy.
- Visual assessment of the Deerfield Wind Project on behalf of Vermont Environmental Research Associates (VERA) and PPM. The project would include 17 turbines in the vicinity of the existing Searsburg Wind Facility.
- Visual impact assessment of a proposed subdivision adjacent to Interstate 91 in Windsor Vermont District for the District #2 Environmental Commission.
- Appointed as member of the National Academy of Science Wind Energy Committee. The Committee's produced a report entitled *Environmental Impacts of Wind-Energy Projects*, which will be finalized in 2007.
- Visual Impact assessment of a small wind turbine in Huntington for the Foundation for a Sustainable Future. The turbine would provide power for demonstrating sustainable agricultural practices.
- Aesthetic review under §248 of the Vermont Electric Coop (VELCO) Northwest Reliability Project for the Addison County Regional Planning Commission.
- Preliminary assessment of a proposed wind energy project in the vicinity of Jordanville and Cherry Valley, NY for Otsego 2000.
- Assisted the Bennington Regional Commission and the Town of Manchester in a public information and review process by providing information regarding the aesthetic effects of the proposed Little Equinox Wind Energy Project.
- Scenic evaluation methodology and protection strategies for the Town of Huntington's Conservation Commission to be used as a tool for prioritizing conservation efforts.

- Visual assessment for the proposed Glebe Mountain wind project on behalf of the Town of Londonderry. My review also examined impacts to surrounding towns.
- Presentation to Scenic America's Board of Directors and Affiliates of the visual issues involved in wind energy development at their annual meeting in Washington, D.C.
- Prepared the report, *Wind Energy and Vermont's Scenic Landscape*, for the Vermont Public Service Department summarizing discussions among stakeholders concerning the visual impacts of wind energy. The guidelines are intended for use by the PSB, prospective developers, and by local and regional planning organizations.
- Brochure for the Public Service Board, *Siting a Wind Turbine on Your Property*, designed to encourage the sensitive siting of small wind turbines to protect scenic views.
- *Open Space Plan Views and Vistas Study* for the City of Montpelier's Conservation Commission. The Study recommended priorities for protection.
- Review of numerous projects for aesthetic impacts under Vermont's Land Use Law, Act 250. Examples include Old Stone House Subdivision in South Burlington, a proposed RV park in Sharon, a wind turbine in Middlebury, Pittsford Post Office, a proposed gas station in Hartland, the Sheffield Quarry, and a Bell Atlantic Communications Tower in Sharon.
- "Scenic Resource Evaluation Process": a team project to develop guidelines for Vermont Agency of Natural Resources' review of Act 250 projects.

Professional Consulting: Design and Planning Projects

- Currently working with the Center for Victims of Violent Crimes to design a ceremonial garden to honor those who have lost their lives to violent crimes. The garden will be located on State property near the State House in Montpelier.
- Currently working with the Town of Marshfield on the design of Martin Bridge Park along Route 2.
- Currently working with the Town of East Montpelier to enhance the village center in coordination with AOT (pro bono)
- Elm Court Park: a small pocket park developed by the Trust for Public Land and the City of Montpelier. The park demonstrates ecological approaches to design and contains a butterfly garden.
- Sabin's Pasture, Montpelier: a site plan for a 147-unit mixed-use neighborhood-scaled project. The project was designed to provide a model for development using "smart growth" principles including compact and traditional patterns of growth and the preservation of open space. The design was part of a community process and was funded by the Central Vermont Community Land Trust, a housing advocacy organization.
- Turntable Park, Stonecutters Way, Montpelier: design for restoration of an historic turntable, along with accommodation of recreational and theatrical use of a small park. (Designed in collaboration with the Office of Robert White).
- Design and construction supervision for numerous residential and institutional projects.
- Randolph Family Housing and Templeton Court, landscape design for low-income housing projects in Randolph and White River Junction, VT.
- Plainfield Common, a public riverside park and small formalized parking area in the village center of Plainfield; this project involved extensive public involvement
- Streetscape Master Plan for Chelsea village: village plantings and hardscape improvements

- for the village center's greens and streets, as well as for several parks and public areas.
- Street tree inventory and plan for the City of Montpelier.
- Conservation and development plans for landholdings in various towns. Plans provide for the protection of important resources including scenic values, agricultural lands, wetlands, and valuable forestland while identifying appropriate areas for development.

Teaching Experience

- **2000-present:** Landscape Design courses at Studio Place Arts in Barre.
- **1982 -1997: Lecturer (University of Vermont, School of Natural Resources and Department of Plant and Soil Science)**
I taught a variety of courses depending on the semester and year. Courses included *Park and Recreation Design* (Recreation Management); *Landscape Design Studio*, and *Colloquium in Ecological Landscape Design* (Plant and Soil Science), and *Visual Resource Planning and Management* (Natural Resources graduate level), and *Environmental Aesthetics and Planning* (Natural Resources). I also organized a seminar and lecture series for Shelburne Farms and for Plant and Soil Science focusing on topics in Sustainable and Ecological Landscape Design. I assisted graduate students in Natural Resources Planning and served on several graduate committees.
- **1996: Faculty (Vermont Design Institute)**
Served as a faculty facilitator for a summer workshop on finding patterns in the landscape as a planning tool.
- **1995: Lecturer (Norwich University, Department of Architecture)**
Taught a course in Landscape Architecture, the first to be taught in the school. Early Design and Planning Experience

Additional Experience

- **1981 - 1982: State Lands Planner (Agency of Natural Resources, Department of Forests, Parks and Recreation)**
Preparation and Coordination of all land management plans for the Department of Forests, Parks, and Recreation; review of plans under Act 250 and Act 248 for aesthetic impacts; provided design services and related expertise to other Agency departments and to municipalities.
- **1978 - 1981: Park Planner (VT. Dept. of Forests, Parks and Recreation)**
Designed state park facilities including site analysis and working drawings, grading plans, construction details, planting plans, etc. Also prepared permit applications, organized public meetings and supervised construction of projects. Reviewed plans under Act 250 for aesthetic impacts. Instrumental in organizing a new state lands management unit.

PUBLICATIONS AND ILLUSTRATIONS

Environmental Impacts of Wind Energy Projects, National Research Council of the National Academies, May 2007 (Pre-publication Copy)

Sabin's Pasture: A Vision for Development and Conservation, Central Vermont Community Land Trust, March 2003.

Siting a Wind Turbine on Your Property: Putting Two Good Things Together, Small Wind Technology & Vermont's Scenic Landscape, Public Service Board, December 2002

Wind Energy and Vermont's Scenic Landscape: A Discussion Based on the Woodbury Stakeholder Workshops, Vermont Public Service Department, August 2002.

Scenic Resource Evaluation Process, Vermont Agency of Natural Resources, July 1, 1990. Guidelines to be used by the Agency of Natural Resources in reviewing visual impacts of development projects under Act 250 in areas of regional and statewide scenic significance.

"Impact Assessment of Timber Harvesting Activity in Vermont: Final Report-March 1990": a research project conducted by the University of Vermont on behalf of the Vermont Department of Forests, Parks, and Recreation. My focus was the visual impacts of timber harvesting.

"Landscapes, Scenic Corridors and Visual Resources": a chapter of the 1989 Vermont Recreation Plan which outlines a five year plan for protecting and enhancing scenic resources in Vermont.

"Healing Springs Nature Trail Guide": a nature trail at Shaftsbury State Park, text, illustrations, and design of trail and bridges.

"The View from the Sidewalk": a walking tour emphasizing the interconnections of environment and culture that shaped the cityscape of Raleigh, North Carolina, text and illustrations. Published by the Raleigh Chamber of Commerce.

Illustrations for other books, guides and newsletters.

Qualifications

- Over 30 years professional experience as a Landscape Architect with involvement in natural resource management activities, outdoors recreation planning, site and facility design, and visual resource assessment.
- Experience in working with water-based, forested, rural, and backcountry environments, integrating natural resource values to achieve ecologically sound recommendations.
- Completed over 100 specific recreation planning and design projects.
- Experience in outdoor recreation planning and design includes surveys, designs, and improvement projects to enhance accessibility for all user groups.
- Project involvement includes highly detailed inventories for hundreds of thousands of acres to assessment and mitigation for site-specific projects.
- Highly knowledgeable in Forest Service Scenery Management System and other inventory processes, and their application to natural resource management activities.
- Experience in project management and team leadership.
- Works well in interdisciplinary team environment and developing creative methods to utilize and interpret existing natural resource and social data in developing project management recommendations.
- Project experience includes working with public agencies, non-profit organizations, communities, and businesses in the private sector.

Education

BS Landscape Architecture / Michigan State University

Professional Employment

1997-Present Thomas Kokx Associates

1995-1997 White Mountain National Forest, Team Leader (Recreation, Landscape Management, and Engineering Section)

1979-1995 White Mountain National Forest, Landscape Architect

1977-1979 Santa Fe National Forest, Landscape Architect

1971-1977 Chequamegon National Forest, Landscape Architect

Professional Affiliations

- American Society of Landscape Architects
- Granite State Landscape Architects

Awards and Distinctions

- Boston Society of Landscape Architects 2007 Merit Award for Crotched Mountain Outdoor Recreation Master Plan.
- American Planning Association, NNE Chapter: Outstanding Project of the Year Award – Kancamagus National Scenic Byway Facilities and Interpretative Plan, Awarded to the White Mountain National Forest and Terrence J. DeWan & Associates (Team member).

- American Society of Landscape Architects: Merit Award – Perception of Clearcutting in the White Mountains / Research project (Team member).
- Numerous awards for work in recreation design, leadership in accessible outdoor recreation, and leadership in landscape management within the National Forest System.
- Invited participation in numerous advisory committees and review of papers in the area of recreation and visual resource management.

Selected Project Experience

Visual Resource Assessment

- Deerfield Wind Power Project / Green Mountain National Forest, VT
- Visual Assessment / Photo Simulations – Ocean Shore Stabilization Project for Town of Ogunquit, ME
- Visual Assessment / Retail Development –Town of New Hampton, NH
- Visual Assessment / 2000 Acre Property on the Connecticut River / Society for the Protection of NH Forest, NH
- Huron-Manistee National Forest / Implementation of Scenery Management System and Addressing Visual Resources in Forest Plan Update, MI
- Dutton Brook II Vegetation Management / Visual Assessment and Environmental Effects Analysis / Green Mountain National Forest, VT
- White Mountain National Forest / Implementation of Scenery Management System and Addressing Visual Resources in Forest Plan Update, NH
- Tennessee Valley Authority / Visual Assessment – Reservoir Operations Study EIS, TN
- Michigan National Forest / Evaluation of Scenery Management Systems for Forest Plan Application, MI
- Visual Assessment / Expert Witness – Penjajawoc Marsh / Impact of Commercial Retail Outlet on Sensitive Wetlands and Rural Setting - Bangor, ME
- Visual Assessment / Computer Simulations – North Carter / Pine Mountain Timber Sale, NH
- Visual Inventory and Assessment / Application To Master Plan and Important Land Use Planning Issues (Communication Facilities, Transportation, Architectural Standards) - Town of Meredith, NH
- Best management Practices For Hillside / Ridgeline Development – Meredith, NH
- Visual Assessment / Nash Stream Forest, NH
- Visual Assessment / Loon Mtn. Ski Area Expansion Project, NH
- Visual Assessment / Hwy. 16 Rock Stabilization Project – Pinkham Notch, NH
- Computer / Visual Simulations – Saddleback Ski Area, ME
- Visual Resource Inventory - White Mtn. National Forest, NH
- Co-Author – Research Project on Cumulative Visual Effects of Clearcutting
- Visual Inventory/Assessment – Saddleback Ski Area, ME
- Computer Visual Simulations – Pico/Killington Ski Area, VT
- Kancamagus National Scenic Byway Vegetation Management Plan
- Instructor / Presenter – Numerous Scenic and Visual Resource Management Workshops at the Federal, State, Local and Conference Level

Recreation and Land Use Planning

- Meredith Town Forest Recreation Plan, NH
- Connecticut Lakes Headwaters Working Forest / Public Access and Recreation & Road Management Plans, NH
- Crotched Mountain Foundation / Accessible Outdoor Recreation Master Plan, NH
- Monadnock State Park Master Plan, NH
- Planning For The Future Of New Hampshire's Forest: A Forest Resource Planning Guide (For Communities) – North Country / Southern NH Resource Conservation and Development Councils, NH
- Town of Meredith Open Space Planning, NH
- The Rock Camp and Retreat Center – Site Evaluations / Assessments, MI
- Maple Haven Administrative Site – Site Evaluation, NH
- Loon Mountain Ski Area Expansion Project EIS, NH (Team Member)
- Waterville Valley Ski Area Snow Making Ponds EIS, NH (Team Member)
- White Mountain National Forest Recreation Site Condition Survey, NH
- White Mountain National Forest Accessibility Survey and Development Plan, NH
- Santa Fe National Forest Recreation Opportunity Survey, NM
- Rio De Las Vacas Canyon Comprehensive Recreation Plan, NM
- Chippewa Flowage Recreation Inventory and Assessment, WI
- Chequamegon National Forest Recreation Plan, WI

Site and Facility Design

- International Paper John Dillon Park / Permitting and Preliminary Design / Accessible Backcountry Park and Hiking Trail, NY
- The Rock Camp and Retreat Center Master Plan / Site Design, MI
- Monadnock State Park Conceptual Designs, NH
- Kancamagus National Scenic Byway Recreation Facilities and Interpretive Plan, NH
- Albany Covered Bridge Parking Lot and Day Use Site Plan, NH
- Hancock Campground Expansion Site Plan, NH
- Big Rock Campground Site Rehab Plan, NH
- White Ledge Campground Site Rehab Plan, NH
- Wildwood Campground Site Rehab Plan, NH
- Sugarloaf Campground Site Rehab Plan, NH
- Russell Pond Campground Improvement and Construction - Contract Supervision, NH
- South Fork Flambeau River / Canoe Campground Site Plans, WI
- Chequamegon Waters / Other Campgrounds – Chequamegon National Forest, WI
- Maple Haven Administrative Site – Concept Plan, NH
- Gorham Administration / Visitor Center, NH – Contract Preparation and Supervision
- Lincoln Woods Visitor Center Site Plan, NH
- Evans Notch Administration Site Plan, ME
- Saco Administration / Visitor Center Site Plan, NH
- Chequamegon Waters Campground Final Design, WI
- Numerous Trailhead Parking Lots and Backcountry Facility Designs